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ABSTRACT

This study investigates two problems related to federal support of elementary and secondary education in Canada: dynamic imbalances between the spending responsibilities and taxing powers of the federal and provincial governments, and the inability of different provinces to achieve comparable educational services at similar levels of financial effort. The redistribution of educational funds is explored in relation to four measures of fiscal capacity: personal income, declared income above a "poverty line," taxable income, and the average yield of a representative provincial tax system. Each measure is used to evaluate the impact of three alternative allotment plans for 1960, 1965, and 1970. These allotment alternatives are applied to data for the 10 provinces to assess the impact of federal direct spending and general fiscal transfers on provincial school systems. Analysis of the data shows that direct and indirect federal contributions to education alleviate extreme interprovincial differences in spending per pupil. However, because of the small federal share of total educational expenditures, interprovincial differences in school spending remain substantial. (Author/JG)

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C-74304

THE IMPACT OF FEDERAL FINANCIAL SUPPORT ON ELEMENTARY AND SECONDARY EDUCATION IN CANADA

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EA 006 943

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1974

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FORWORD

In the last two decades, Canadians faced the task--and the cost--of opening up the school system to full participation by all children and adolescents, whatever their social origin, whatever their career hopes, wherever they lived, and whatever their initial handicaps.

This democratic ideal is a long way from being realized, or even satisfactorily defined, but already it is seen to have led us into a far bigger undertaking than was imagined. Disparities and inequities still abound, and in attacking them we are becoming aware that their causes are more complex than we had thought. New concepts of the school in relation to society are emerging, and the cost of making these real will test the sincerity of our commitment to genuine equality of opportunity.

In the confusion of the debate, two things are clear. One is that the politicians responsible for education--those at the provincial and local level--are balking at the costs. They have seen the cost of government and the maintenance of public services go up from one-fifth to one-third of the gross national product in the last twenty years. Their own share of that growing cost has increased by fifty per cent, yet they draw their revenues from sources that have limited growth possibilities.

The second clear fact is that a very wide difference in the ability of provinces to bear such costs is a permanent fact of Canadian life.

In this situation the role of the federal government is increasingly important. Drawing its revenues from the sources which have the greatest potential for growth and flexibility, it is already making transfer payments amounting to more than one-fifth of the total revenue of the provinces.

The role of the government in Ottawa, however, is much more than a mechanical balancing function. No other government carries the responsibility for the general soundness of the Canadian economy--even though all have an interest at stake. No other government carries the overall responsibility for equity in Canadian society and the equal well-being of Canadians.

Since the benefits of education to the economy and to the well-being of people are by no means confined to the jurisdiction in which education is provided, the federal government has some moral responsibility, as well as the economic power, to see to it that all the provinces have the means to provide the educational opportunities that all Canadians need. How well is it doing this? In what ways could it do it better?

A long-standing commitment to the goal of equality of opportunity has involved the Canadian Teachers' Federation in a continuous study of the distributive mechanisms that link provincial and local needs to federal sources of revenue. As a staff member of CTF, Dr. W.J. Brown has for several years borne the major responsibility for this enquiry.

This present work is, in substance, the thesis prepared by Dr. Brown for the degree of Doctor of Philosophy in the University of Toronto. It is a study of the effectiveness of various real and hypothetical distributive mechanisms in equalizing the financial ability of the provincial and local jurisdictions to provide for the education of Canadians. Dr. Brown gratefully acknowledges the constructive criticism and helpful suggestions of his thesis advisors: Dr. John W. Holland (Chairman), Dr. Cicely Watson and Professor E. Brock Rideout.

Norman M. Goble
Secretary General
Canadian Teachers' Federation

CHAPTER I

INTRODUCTION

People are born with different genetic endowments and they are exposed to different environments, first within the family and later in society. In the absence of any public interference, great disparities in material and social rewards will arise. Throughout recorded history the extremes of these differences have been judged socially, politically or economically undesirable in varying degrees.

THE EVOLVING CONCEPT OF EQUALITY

The concept of equality as a positive social value is young; its evolution has been linked with that of democracy as a political ideology. When equality is viewed as something more than a synonym for "fairness", "equity" or "justice", there are at least two of its aspects which are important for this dissertation: equality of outcomes and equality of opportunity.

Equality of outcomes would prevail if there were an equal distribution of income and other social rewards. Equality of opportunity, on the other hand, refers to the conditions of access to high incomes and social rewards. It may be measured in terms of the probabilities for achieving specific desirable outcomes for people with similar backgrounds and abilities or for people with different backgrounds and abilities.

Coleman offers the following explanation of the conceptual distinction between inequality of outcomes and inequality of opportunities: "If there are two societies with a given degree of inequality of result, one of them might have total inequality of opportunity, via direct transmission of occupational position and wealth from father to son, while the other might have total equality of opportunity, with the son's income unrelated to that of his father. Of course, at the extreme of perfect income equality, there can be no inequality of opportunity since there is no opportunity to do better or worse."[1]

It is important to recognize that the concept one holds of "equality", as referring primarily to equality of results or to equality of opportunity, depends crucially upon the social, political and economic ideology and the normative philosophy of man held.[2] A person committed to liberal, democratic values and a capitalist market economy might be expected to stress the equal opportunity to compete; whereas a person committed to the socialist values might stress the need to treat individuals in such a manner as to produce the identical levels of total benefits.

Equality in Education

In recent years educational systems in the United States have come in for heavy criticism for not providing equality in education. The more critical climate to some extent reflects a shift in emphasis from stress on equality of access to equality of outcomes. Coleman has identified several stages in the evolution of the concept of equality in education in the United States.[3] Initially, equality in education meant free education up to a specified age and a common curriculum for all children in the same school within a given locality. The equality lay in access to a common curriculum and common facilities, that is, in an economic sense to the provision of equal service. The onus was clearly on the child and his family to take advantage of the opportunities provided. The role of the schools was the passive one of not excluding the child from participation. This concept of equality was implicit in most educational practice in the nineteenth and first half of the twentieth centuries.

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[1] James S. Coleman, "Equality of Opportunity and Equality of Results," Harvard Educational Review, Vol. 43, No. 1 (February, 1973), p. 130.

[2] Brian Crittenden, "Equal Opportunity: The Importance of Being in Context," Journal of Educational Thought, Vol. 4, No. 3 (December, 1970), pp. 138-9.

The second stage in the evolution of the concept of equality in education arose out of southern black demands for equality. To avoid integration of their publicly supported schools, southern states adopted the notion of "separate but equal". It was long maintained by critics of this notion, and it became evident to more and more people, that although the educational facilities may have been the same, at least in terms of resources consumed, their effects were different. A new element was added to the concept of equality in education. The characteristics of the students themselves are a part of the "facilities provided", so that equality depends upon the socio-racial composition of schools as well as on the curriculum and physical and other facilities.

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[3] James S. Coleman, Responsibility of the Schools in the Provision of Equal Educational Opportunity. A paper presented at the NASSP Conference, February 12, 1968, Atlantic City, N.J., 15 pages.

The third stage began with the United States Office of Education Survey of Equality of Educational Opportunity which was carried out under Coleman's own direction under the Civil Rights Act of 1964.[4] This survey defined equality in education with reference to the effects of schooling on measured educational achievements of individuals with equal backgrounds and abilities. Coleman foresees a fourth stage in which the evolving concept of equality will be defined with reference to the effects of the schools on the educational attainment of persons of different cultural, racial and linguistic backgrounds and different abilities.

The first two stages focus upon the input resources brought to the school through the actions of the school administration (first stage: curriculum, facilities, teacher quality, etc.) or through the qualities of the students (second stage: learning capacities, socio-racial backgrounds). The final two stages focus on the effects of schooling on the child's learning.

The first two stages correspond approximately to Crittenden's liberal-capitalist concept of equality in which ". . . the purpose is to ensure that the chances of achieving the prized objects of the society are as close to being the same for every individual as they can be made.", and that, in the provision of education, specifically, ". . . the members of a society make a relatively greater effort on behalf of children who are in various ways handicapped than for others."[5] The second two stages correspond to his egalitarian or moral-social concept of equality ". . . as a distinct ideal which requires that individuals should be treated in such a way that the outcome approaches the situation in which all human beings enjoy the same level of total good."[6]

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[4] James S. Coleman et al., Equality of Educational Opportunity (Washington, D.C.: U.S. Government Printing Office, 1966), 737 pages.

[5] Crittenden, op.cit., p. 135.

The major finding of Coleman's U.S. Office Study was that the characteristics of schools which were most alike for blacks and whites (i.e. curriculum, facilities and teacher quality) were least effective for their educational achievement. In Coleman's words, ". . . the crucial point is that effects of inputs have come to constitute the basis for assessment of school quality (and thus equality of opportunity), rather than the mere definition of particular inputs as being measures of quality (i.e. by definition, small classes are better than large, higher paid teachers are better than low paid ones)".[7]

In Coleman's view, the shift of the concept of equality in education from school resource inputs to the effects of schooling leads logically to the shift of responsibility for learning from the child to the educational institution. In fact, since the educational institution is merely a service agency for the school governmental authority it is a shift from the child (or his family) client to the service provider (the community). This shift may be realized ". . . through a change in the very concept of the school itself, from the agency within which the child is taught to the agent responsible for seeing that the child learns--a responsibility in which the school's own facilities may play only a part."[8]

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[6] Ibid., p. 133.

[7] Coleman (1968), op.cit., p. 8.

More recently, in their book, Inequality: A Reassessment of the Effect of Family and Schooling in America, Christopher Jencks and seven others at Harvard University's Centre for Educational Policy Research have gone beyond the concept of equal opportunity defined in terms of school achivement levels, extending it to encompass long-term levels of educational attainment and adult income.[9] The Jencks argument consists of the following three propositions: (1) incomes in the United States ought to be substantially more equally distributed than they are now; (2) more spending on schools cannot make incomes substantially more equal than they are now; and (3) there are non-educational policies which would reduce income inequalities. Jencks' thesis seems to be that schooling has very little to do with an individual's chances for a good life measured in income.

It must be acknowledged that the research findings of Coleman, in particular, have raised legitimate questions concerning the extent to which more equal distribution of funds for education actually promotes equal educational achievement--at least as measured by standardized tests for blacks and whites in the United States. It remains to be seen whether the findings of this research attain widespread validity. In particular, it remains to be seen whether similar research involving subgroups in the Canadian population would yield similar findings.

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[8] Ibid., p. 11.

[9] Christopher Jencks, et al., Inequality: A Reassessment of the Effect of Family and Schooling in America (New York: Basic Books, 1972), 399 pages.

As for the more recent work of Jencks and company, we agree with Rivlin, who contends that his whole study is "an elaborate attack on a straw man" stating, "I do not know of anyone who contends that education reform is a more effective way to reduce the inequality of income than giving the poor more money."[10] Coleman, on whose original data Jencks' analysis was largely based, is also highly critical, claiming that the book contains "fundamental difficulties" arising from confusion between different meanings of inequality. While Jencks' preoccupation is with inequality of incomes, nearly all of his analysis deals with questions of inequality of opportunity. In Coleman's words, ". . . the result is a book that fails to study appropriately either inequalities of income or inequalities of opportunity."[11]

Coleman also refutes convincingly the claim of Jencks that reductions in the range of educational attainments in the United States have not materially reduced economic inequality among adults. He compares coefficients of variation for income and education in the United States from 1929 to 1970 and demonstrates that declines in the two coefficients have been "remarkably similar" over the period.[12] Coleman concludes, "Though other explanations could be offered, they [the declines in inequality for income and for education] suggest that increasing equality of education does have a strong effect on increasing equality of income."

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[10] Alice M. Rivlin, "Forensic Social Science," Harvard Educational Review, Vol. 43, No. 1 (February, 1973), p. 64.

[11] Coleman (1973), op.cit., p. 131.

[12] Jencks, op.cit., p. 255 and Coleman (1973), op.cit., pp. 132-3.

The findings of both Coleman and Jencks may or may not be sustained and attain universal validity. In any case, their policy implications are constrained by the fact that the intended result focuses narrowly on the schools as means rather than as ends. The objective of equal incomes presupposes that fiscal redistribution for education is justified only to the extent that it produces similar results for similarly endowed pupils--not only similar educational results but, for Jencks, similar material and social rewards in later life. It is still legitimate, however, to argue for policy aimed at redistribution specifically for education on the basis of the older moral premise that each child is entitled to the best educational experience currently provided to the most fortunate students. This is to claim intrinsic merits for formal educational experiences, and that inequalities in those experiences now being offered to children should be reduced by making the experiences available in all classrooms more like those in what are currently considered to be the best or most desirable. Thus, even in the unlikely event that the kind of research done by Coleman and Jencks attains universal validity and acceptance, there remains a case for fiscal redistribution for education so long as there are measurable and consensual differences in the quality of educational experience from community to community or province to province.

The prevailing concept of equal educational opportunity in Canada approximates the later phases of Coleman's first stage, that is to say, the emphasis is on equal access to a common service but with some attention given to matching students to differential curricula according to their abilities and aptitudes.[13] Manley-Casimir and Housego have traced the evolution of political values in French and English Canada to try to account for the absence in this country of a strong commitment to a political ideology which might be reflected in a socialist-normative interpretation of educational opportunity. Their conclusions are as follows:

> In general terms, both French and English Canadian experiences have been reactive rather than radical. Neither culture group has generated a profound social revolution based on a carefully articulated set of charter values. Both have been characterized by the explicit awareness of the need to preserve the existing social order and both have occurred within a traditional set of values among which equality and liberty have not played a dominant role. As John Porter notes, "If there are Canadian values, they tend to be counter-revolutionary, colonialist, conservative and monarchical (rejection of republicanism, for example)."[14]

Whatever concept of equality in education prevails in Canada, educational policy will express its objectives in terms of educational equity as one of its major policy objectives. Part of the rationale for the public provision of education is the need to alleviate in some degree individuals' differential abilities to ensure satisfying and useful lives for themselves and their families, their society, and their economy.

Purpose of the Study

The philosophical position underlying the examination of fiscal redistribution for education in this dissertation is that the quantity and quality of educational resources available to children in elementary and secondary schools across Canada should be a function of the total resources of the nation rather than of the province or community of residence. More specifically, this study is based on the premise that educational resources should be available to children according to their abilities and aptitudes, regardless of the wealth of the province or community in which they are located. The constitutional responsibility for provision of elementary and secondary education should remain with the provinces. However, Canada is, first and foremost, a country made up of people and only secondarily a collection of governments. When the costs and benefits arising from social services, such as education, transcend provincial boundaries, a national responsibility is incurred. Only the federal government has the moral obligation to all Canadians, the taxing capacity and the redistributive machinery necessary to ensure that each province can provide adequate and comparable standards of social services, such as education, without imposing substantially higher tax burdens than those prevailing in other provinces.

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[13] M. Manley-Casimir and I.E. Housego, "Equality of Educational Opportunity: A Canadian Perspective," The Alberta Journal of Educational Research, Vol. 16, No. 2 (June, 1970), pp. 79-87.

[14] *Ibid.*, p. 82.

If the public resources earmarked for education were distributed equally among, or on behalf of, persons of unequal private endowments, they would simply maintain approximately the same level of inequality. When, because of the social benefits involved, the principle is accepted that public resources for education should be unequally distributed so as to offset the inequality in private resources, genetically or otherwise conferred, several fundamental questions must be answered. These concern the definition and measurement of needs, of the fiscal capacity to meet those needs, and of the allotment functions which specify the relationship between the allotment per unit of need and fiscal capacity per unit of need.

This dissertation will examine the above questions as they apply to the financing of elementary and secondary education in Canada. The empirical exercises will focus on the redistributive impact of federal-provincial fiscal arrangements on school systems in the Canadian provinces. Specifically, they will identify several alternative methods of fiscal redistribution which might be employed--differing in the mathematical form of their allotment formulae, in the measure of fiscal capacity used and, where appropriate, in the measure used to define program or fiscal need. The alternative schemes thus identified will be used as benchmarks against which to evaluate some of the redistributive effects which the existing federal-provincial fiscal arrangements have had on the financing of elementary and secondary education in Canada. A second objective of the empirical work will be to assess the manner in which the problem of dynamic imbalance between spending needs and revenue sources has been met at the federal-provincial level and what the implications have been for elementary and secondary school systems.

In common with much of the work in the economics of the public sector, this study makes use of Richard Musgrave's conceptual framework.[15] For analytical purposes, Musgrave divides the public household into three branches: an Allocation Branch to establish an efficient allocation of resources; a Distribution Branch to attain the desired distribution of income and wealth; and a Stabilization Branch to maintain high and stable levels of employment and output. Most of Musgrave's analysis is in terms of a unitary state, although he addresses himself briefly to the question of how the major fiscal responsibilities should be divided in a federal state. In recent years, several writers, including Musgrave himself, have given attention to the problems of a multi-level public household. Although their work is conceptually interesting, it is of relatively little help in developing techniques for evaluating intergovernmental fiscal mechanisms or their appropriateness in specific policy areas. They offer little to the educational planner who is concerned to assess the effects on school systems of differences in ability to finance education and to alleviate these differences.

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[15] Richard A. Musgrave, The Theory of Public Finance (New York: McGraw-Hill Book Company, Inc., 1959), Chapter 1.

Both Musgrave and Oates argue convincingly that the stabilization function must be the primary responsibility of the central government. The two basic sets of stabilization tools are monetary authority and the power to exercise an independent fiscal policy. Local and regional governments do not generally have access to the monetary authority.[16] To permit a regional government to make new money, in effect, would be to give it unlimited claim on the real resources of the other regions. Concerning the authority to exercise an independent fiscal policy by second levels of government, Oates writes:

> In the Stabilization Branch, the effective use of an independent fiscal policy by local governments is seriously constrained by the openness of the community, which implies a small conventional

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[16] For example see Wallace E. Oates, "The Theory of Public Finance in a Federal System," Canadian Journal of Economics (Vol. 1, No. 1, February, 1968), pp. 37-54 and Richard A. Musgrave, "Approaches to a Fiscal Theory of Political Federalism," Public Finance: Needs, Sources and Utilization (Princeton, N.J.: Princeton University Press, 1961). pp. 97-122.

> multiplier, by restrictive balance-of-payment forces, and by the growth of external indebtedness in response to deficit financed expenditures. Furthermore, since in a federation, cyclical fluctuations are generally of a nationwide character, it is essential that there be a centrally planned and directed compensatory policy.[17]

Therefore, since it is generally conceded that stabilization policy is the responsibility of the central government and peripheral to the question of the effects of intergovernmental fiscal transfers on the financing of education, this study concerns itself mainly with what Musgrave terms the Distribution Branch.

OUTLINE OF THE STUDY

Chapter II will discuss the need for intergovernmental fiscal adjustments in general terms, with particular emphasis on the need for federal-provincial fiscal adjustments. Selected economic aspects of federalism, as they affect education, will be dealt with in Chapter III. These include alternative strategies for allocating spending responsibilities in a federal state, the major sources of distributional inequity in a federal state and a consideration of equity and efficiency as performance goals. In Chapter IV, alternative intergovernmental fiscal mechanisms for achieving three major objectives are discussed: (1) the promotion and maintenance of better fiscal balance between aggregate spending responsibilities and revenue means for the two sovereign levels of government; (2) fiscal redistribution to permit each province to provide comparable standards of educational service without imposing rates of taxation substantially higher than those of other provinces; and (3) the promotion of greater allocative efficiency in arriving at socially optimum levels and standards of government service.

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[17] Ibid., p. 54.

Chapter V consists mainly of the empirical examination of measures which have been taken in Canada to meet the changing patterns of demand for public services and of taxation yield between the federal and provincial-local governments with particular reference to elementary and secondary education. The major empirical work of the dissertation is found in Chapter VI. It begins with an examination of alternative measures of educational need, fiscal capacity and relative ability to finance education. These measures are then used as bases for evaluating the redistributive characteristics of three mathematical allotment functions. The allotment alternatives, in turn, provide a conceptual framework and normative guidelines for an empirical assessment of the redistributive impact of federal transfer payments on provincial school systems.

The dissertation ends with a detailed summary of the major findings of the study and the policy implications arising from them.

CHAPTER II

THE NEED FOR INTERGOVERNMENTAL FISCAL ADJUSTMENTS

The most distinctive feature of federal systems is the formal division of powers and responsibilities between the central and regional governments. Not only is this division the most contentious issue when federal unions are established, but also, the conflict between centralization and decentralization tends to remain a fundamental issue in subsequent years.[18] This being the case, it is appropriate to begin this discussion with a summary of the major political and economic arguments in favour of decentralization, followed by a more detailed discussion of the problems arising from decentralization. It is these problems which give rise to the need for the intergovernmental fiscal arrangements which are discussed in Chapter IV.

Consideration of the pros and cons of decentralization can indicate the relevant costs and gains which might be expected if a country moves toward having fewer or more regional or local governments, but it cannot indicate at what point along the spectrum lies the "ideal" distribution of powers and responsibilities. The normative question, along with other economic aspects of federalism, is considered in

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[18] For an excellent discussion of the inevitability of conflict in a federal system and the nature of this conflict see D.G. Hartle, "The Impact of New Tax Policies on National Unity," Institute for the Quantitative Analysis of Social and Economic Policy, Policy Paper Number 1, October, 1968.

Chapter III. Here we shall simply review the main arguments usually advanced. Some of these arguments apply as much to the rationale for delegated decentralization of responsibilities from provincial to local governments as they do to the rationale for a constitutional division of powers between federal and provincial governments. Hence some of the examples cited relate to "local" as well as to "regional" or provincial units of government.

THE CASE FOR DECENTRALIZATION

Political Arguments

Perhaps the strongest case for decentralizing the governing authority, spending authority in particular, is made on grounds of political expediency. Historically, federal unions and the decentralization which is characteristic of them, represent the compromise which made possible that particular union of diverse geographic, racial or cultural entities. Secondly, in contrast to a unitary system of government, a federal system provides for dispersal of the political power so that political action becomes highly visible regionally and locally, and elected officials can be held responsible for decisions as they affect the unique needs of a region.

A third point frequently made in favour of decentralization is that it makes the dictatorship of one region over the whole nation difficult or impossible. By its very nature decentralization creates a set of checks and balances so that no one group obtains complete control of any one government function. For example, the dispersal of the control over education in Canada ensures that major issues cannot be settled by a simple majority across the nation. Under such a highly decentralized national educational system, if a citizen does not like the practices of his local school board, he can move his residence, which has the effect of placing his children in another school system. If he finds himself at odds with the educational policies and standards of his province, as defined by the provincial ministry or department of education, he can move to another province where educational policies are more in keeping with his own convictions. This is not a spurious "freedom". If a French speaking parent in Ontario is dissatisfied with the opportunities for bilingual education provided in his community, he may well find that bilingual classes are twice as prevalent in the school system of his neighbouring suburb. If a Roman Catholic parent in Manitoba wishes to have a Catholic education for his young children provided by a public authority at public expense, he can, by moving to Ontario and enrolling his children in an elementary school of the Separate School System, achieve this aim. If a parent in Nova Scotia wants his child to be provided with 13 years of free education before entering upon a three year, liberal arts undergraduate program (for which fees are payable) instead of the 12 year free schooling and four year (fee paying) university sequence of his province, he must move to a province--such as Ontario--where the given policy has been adopted. The more centralized the authority, the less the citizen is able to avoid what may in effect be the dictatorship of the majority. The right of the citizen to have a voice in running his local schools is an important educational aspect of traditional North American political ideology in the centralization vs. decentralization issue. In Canada there is a high tolerance of local and regional differences in this public service.

A fourth argument in favour of decentralization is that, in providing a variety of approaches to the provision of given public services, decentralization offers some security against a mistaken judgment being widely accepted for a long period of time. This could be particularly important in a service such as education, where the costs and benefits from alternative programs are highly uncertain and difficult to measure precisely:

> People often believe that experts should identify all our long-run goals, figure out the best educational program to achieve those goals, and provide this program to all pupils having appropriate abilities. Yet the main goal should probably be to provide adaptability, to hedge against uncertainty about goals, future technology, and the future environment in general. The probability is high that the judgment of any one group about the "right" educational program will be a mistake. A multiplicity of judgments is more likely to include good decisions and to preserve or invest valuable features whose value cannot yet be perceived.[19]

One other political argument frequently made in favour of decentralization is the popular notion that local government is the foundation of democratic government. In support of this belief, it is claimed that it is at the local level the individual citizen is best informed and can best exert his influence as a voter.

Of course this is not a complete list of the political arguments for decentralization; nor does the order of appearance suggest their relative importance. We are not concerned here with the controversy of centralization vs. decentralization. We merely wish to recognize that, although we shall be confining our interest to the economic aspects of federalism, it may well have been the overriding political advantages which actually caused the union. If no strong case could be made for a decentralized political authority in a nation such as Canada, there would surely be no case for intergovernmental fiscal arrangements which enable us to maintain the political advantages of decentralized authority while reaping certain economic advantages of considerable centralization.

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[19] Roland N. McKean, Public Spending (New York: McGraw-Hill Book Company, Inc., 1968), p. 168.

Economic Arguments

People will acquire information, think about issues, vote, and participate in the political process at the level where their interests, comfort and welfare are directly affected. They tend to act responsibly about matters they understand. If the connection between public spending and public service is visible to, and well understood by the voter, then interest and participation in the economic decisions of government are more likely to emerge. Governments become responsive to the wishes of citizens concerning spending and revenue decisions, when these opinions are articulate and well organized. Regional governments must be more responsive to opinions on local spending than central governments whose local spending is seen as being merely a rather minor branch of a national action taken by remote decision makers represented as "they". Broadly speaking the higher the degree of centralization the more uniform will be the standards of service, and hence of public spending, across the regions of the nation, but the less responsive will the decisions on spending be perceived to be in terms of the unique preferences of a particular region.

A second economic argument frequently advanced for decentralization is that it permits a degree of choice among alternative patterns of spending and taxation.[20] For a nationally provided service the citizen has no choice of variations in patterns of expenditures and taxes for a particular function. The pattern adopted will represent either "the highest common factor": across all interest groups or regions of the country or the "greatest good" for a particularly large or influential group or region. However, when local and regional governments have spending and taxing authority there is an approximation of a free market in public services. Citizens can choose among the "fiscal packages" offered by alternative communities. By "voting with their feet", they select that which comes closest to their desires or exhibits the fewest undesirable features.

THE COSTS OF DECENTRALIZATION

Allocative Inefficiencies

(a) Dynamic Imbalances Between Spending Responsibilities and Revenue-Raising Powers

A constitutionally defined division of spending powers and revenue sources between the central government and regional, provincial or state governments is a distinctive feature of the federal form of government. The ratio of centralization to regionalization of these responsibilities depends primarily upon the negotiating groups which formed the original federation. In addition to all their other biases and vested interests, the founders bring to the original negotiations their bias concerning the appropriate level of government for the administration of the selection of public services provided at that time. The division of spending and taxing powers subsequent to that time is determined by the constitutional amendments and judicial interpretations of later generations.

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[20] One of the best discussions of a system of local governments as an approximation of a free market for public goods is Charles M. Tiebout, "A Pure Theory of Local Expenditures," Journal of Political Economy, 64 (October, 1956), pp. 416-24. See also George Stigler, "Tenable Range of Functions of Local Governments," in Joint Economic Committee, Sub-Committee on Fiscal Policy, Federal Expenditure Policy for Economic Growth and Stability (Washington, D.C., 1957), pp. 213-19.

Spending responsibilities and revenue sources may be roughly in balance for the senior levels of government at the time of federation, but it is unlikely that they will remain in balance for any substantial period thereafter. As social and economic conditions change, the priorities for desired public services also change and the relative importance of the various revenue sources waxes and wanes. In a unitary state the government can alter spending patterns and tax structures at will, in response to these changes, but in a federal state the original division of powers (particularly spending powers) between the central and regional governments is a constraint.

In recent decades in Canada imbalances between governments' spending responsibilities and revenue-raising powers have become particularly apparent. Between 1947 and 1971 federal government expenditure on goods and services increased only from 4.8 to 5.2 per cent of Gross National Expenditure while that of provincial and local governments rose from 5.2 to 11.9 per cent--evidence of the dramatic increase in demand for services such as education, health and social welfare which in Canada are almost entirely a provincial responsibility. For example, total spending for education increased from 2.7 per cent of Gross National Product in 1947 to 8.1 per cent (estimated) in 1971.[21]

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[21] Expansion of numbers was partly responsible for this development. There were also expensive changes in the nature of the services: greater complexity and diversity of programs and courses requiring more highly trained personnel and sophisticated equipment.

In an attempt to meet the heightened demand for education and other provincial-local government responsibilities, rates of old taxes were raised, their bases enlarged and new taxes added. Despite such measures, the pressures to enlarge the spending of these governments exceeded the aggregate ability (or willingness) of the provinces and their local governments to increase tax yields from their own sources.

There are several reasons for the failure of provincial and local government revenue sources to keep pace with their spending needs. First, the yields of the major taxes on which the provinces and their localities relied until the early sixties, real property and sales taxes, respectively, did not respond automatically to growth in the economy as well as did the income taxes which made up the largest share of federal revenues.

In 1960, 80.8 per cent of local tax revenue from own sources came from real and personal property taxes.[22] In the absence of changes in the tax base or tax rates, the revenue elasticity of property taxes with respect to changing levels of income is less than unity. A one per cent increase in income results in less than one per cent of increase in the yield of the property tax because the tax is proportional to a base which does not respond automatically or quickly to changes in income levels.

Also in 1960, 53.9 per cent of provincial revenues from own sources came from sales taxes. The revenue elasticity of sales taxes, bases and rate structures held constant, is typically slightly greater than unity, due mainly to the fact that sales of most commodities increase with rising levels of income.

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[22] The figures quoted in this and the following two paragraphs are from Statistics Canada, A Consolidation of Public Finance Statistics 1960 (Ottawa: Queen's Printer, 1963), Table 1, p. 5.

The revenue elasticity of income taxes is considerably higher than that of either sales or property taxes, often in excess of 1.75. In addition to having an automatically expanding base, progressive rate structures and the changing income distribution profile further enhance the revenue elasticity of the personal income tax. In 1960, 60.7 per cent of federal revenues from own sources came from income taxes compared with 26.4 per cent of that of the provinces.

A second circumstance which tends to hamper the revenue-raising ability of provinces and local governments is competition with other jurisdictions for relatively mobile individuals and business.[23] To the extent that the lower levels of government are competing with each other by offering various mixes of public services in return for various types and levels of taxation, any one of them is limited in its freedom to act independently. If a jurisdiction raises existing taxes or imposes new ones, it may force individuals and businesses to relocate.

Thirdly, the high quality services which are supplied without charge to specific users tend to create their own demand. For example, high standards of welfare aid or superior public schools attract families who may add more to the costs of services than to local revenues. The burden of taxes to pay for such superior services may force taxable persons and enterprises to relocate. To the extent that the increased benefits accrue solely or primarily to low-income groups, the persons and enterprises driven out will be those having a relatively high taxpaying capacity. Provinces are much freer than local communities to vary their tax rates and impose new taxes without fear of competition, but they are not entirely free from this hazard. In short, interprovincial and interlocality competition for business and for wealthy residents curb provincial and local initiative for raising existing taxes or developing new tax bases.

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[23] See Tiebout, op.cit.

Another circumstance which tends to inhibit municipalities and, to a lesser extent, provinces from raising additional tax revenue is the greater visibility of property and sales taxes. Local opposition is less likely to be aroused by a rise in the federally administered income tax than by a rise in the municipally administered property tax.

From the above discussion it is clear that the lower revenue elasticity of retail sales and property taxes, which have been most closely identified with provincial and local governments, requires explicit changes in tax bases and rates in order to keep pace with the growth of spending needs.

These limitations on the revenue-raising capacities of municipalities and provinces have acutely affected the financing of Canadian elementary and secondary education which until the mid-sixties rested mainly on the local property tax. The public service which has grown most rapidly has been the one which was closely tied to revenue sources politically difficult to exploit. In addition, the yields of these sources have been least responsive to the growing economy. It is not surprising, therefore, that expansion in spending for elementary and secondary education has directly and indirectly induced greater intergovernmental fiscal transfers.

(b) Suboptimal Levels or Standards of Service

When the decisions and actions of a region or community affect only that jurisdiction, it is difficult to justify interference by a higher level of government. However, when decisions made in or by one jurisdiction result in costs and gains in other jurisdictions, interdependencies arise. The existence of these interdependencies provides the economic rationale for interference by central government.[24]

Interdependencies among regions and communities arise because people, effects and things move from place to place. As societies modernize and industrialize, improved communication and transportation networks result in great mobility of people so that there is an actual acceleration of interdependencies. The more people move about within Canada, the more widespread will be their concern for the health, education and general welfare services in other communities and regions. For example, industrialization has caused air and water pollution and other undesirable effects beyond the jurisdictions where they originate. This is a type of interdependency not previously recognized.

The existence of interdependencies among regional and local authorities gives rise to several kinds of inefficiency in the allocation of resources. The most important of these arises from spillovers or externalities. When benefits from the provision of a public service accrue to people outside the providing jurisdiction or, conversely, when some of the costs of a service are borne by people in other jurisdictions, who receive no service, it is likely that too little or too much of the service will be produced.

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[24] We do not deny that traditional and institutional constraints exist which discourage the interference of higher levels of government in the affairs of lower governments; here we are only discussing the existence of interdependencies and inefficiencies to which they give rise, not with the institutional obstacles themselves. The history of intergovernmental fiscal relations in Canada suggests that once the economic case for involvement by higher governments is established, the institutional constraints simply tax the ingenuity of politicians and officials in finding ways to overcome or circumvent them.

Individuals and firms may, in addition, be provided with an economic incentive to change location so as to increase externalities. They will tend to locate where they can reap benefits of services but avoid their costs. For example, the poverty, overcrowding and pollution found in many large cities have induced many people to move to the suburbs. They thereby retain the advantages of working in a city without the city's unpleasant living conditions and costs of public services. While there are a variety of responses which a local authority may make, including payroll taxes, such measures tend to induce still further reactions of people and firms attempting to reap benefits and avoid costs. Only a senior level of government is able to internalize the externalities in question. In this case a provincial or federal government can either provide the services or establish an intergovernmental fiscal arrangement to alleviate the inefficient or undesired patterns of resource allocation.

(c) Production Costs

The chief disadvantage of having multiple levels of government provide public services is that some units may not be large enough to attain a feasible unit cost. Certain services may be decreasing-cost industries in the sense that it is possible to reduce unit costs by producing higher outputs per period than could be absorbed locally.

In that event, the advantages of larger units, in terms of lower unit costs must be weighed against their political costs in terms of local or provincial autonomy.

Distributional Inequities

Another factor which necessitates intergovernmental fiscal adjustments arises from differences in the level of real income among provinces and among localities. Jurisdictions with low levels of real income must place heavier tax burdens on their citizens in order to provide a similar standard of public service to that provided in wealthier communities. To the extent that prevailing ideas of social justice or political expediency require alleviation of this situation, there is a need for distributional policy. The problem of differential tax burdens to provide similar services is exacerbated by jurisdictions of low income which need higher services, particularly social services. There are provinces and communities in Canada where the provincially or locally generated incomes are insufficient to support acceptable standards of private consumption, let alone permit adequate support of such services as education. This is a problem which requires redistribution.

The root causes of differences in real income levels are differences in the quantity and quality of the major factors of production. The long-term solution to the self-perpetuating cycle of low-quality factors, low incomes and inadequate public service might well be migration of the population or comprehensive regional development schemes to bring the factors of production, labour in particular, up to standards which will generate higher levels of average income. It might be argued that fiscal redistribution among governments is at best a stop-gap measure. It may even perpetuate the misallocation of resources since the higher levels of public service permitted by the redistribution impede the desirable outflow of labour and capital from the recipient jurisdictions called for by the marginal productivity principle.

Graham contends that fiscal transfers do not distort resource allocation by impeding mobility; they merely alter the condition of, and motivation for migration.[25] Those who oppose equalization transfers would rely upon the "push of poverty and adversity" to move people from the poor to the richer areas of a country. Yet poverty breeds apathy and there is historical evidence that it is not the hopeless poor who migrate but the more energetic and resourceful, those for whom the hope of improvement is a reasonable expectation. If, as a result of fiscal transfers which permit good standards of public services, communities are well-educated and healthy their mobility will spring from self-confidence and individual initiative not from poverty and defeat and public initiative. Such migrants are more likely to become productive members of the recipient economy.

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[25] John F. Graham, A.W. Johnson and J.M. Andrews, Inter-Government Fiscal Relationships (Toronto: Canadian Tax Foundation, 1964), p. 17.

CHAPTER III

SELECTED ECONOMIC ASPECTS OF FEDERALISM WITH REFERENCE TO EDUCATION

Chapter II summarized the major political and economic arguments for the decentralization of powers in a federal state and included a more detailed discussion of the problems and difficulties arising from decentralization. Allocational inefficiencies and distributional inequities are the reasons for intergovernmental fiscal adjustments. In this chapter we explore other aspects of allocation and distribution in a federal country, with special reference to education. First we shall consider the efficient distribution of spending responsibilities among levels of government in a federal state; then some economic means of attaining the desired distribution of income, wealth and the benefits of public services in a federal state will be considered. In this discussion alternative concepts of federalism are defined and the link between solutions to problems of distribution and the concept of federalism held will be explored. The final section of the chapter deals with the performance objectives of equity and efficiency in the provision of education.

THE EFFICIENT ALLOCATION OF SPENDING RESPONSIBILITIES IN A FEDERAL STATE

We have already conceded that it is both arbitrary and unrealistic to try to isolate purely economic factors from all of the other influences which give rise to the political compromise which becomes a federal union. Economic considerations have undoubtedly influenced the division of political authority in Canada, but it would be an overstatement to suggest that they have been of overriding importance. It is obvious that cultural and language divisions, geography and demography (i.e. distance and the distribution of population) have been of greater importance. Nevertheless, as an academic exercise, there is justification for taking a strictly economic approach for analysis of the division of political authority in a federal structure. This will produce a highly oversimplified model or prescription for an economically efficient division of responsibility among separate levels of government but, having started with such a description, it is then possible to introduce a number of qualifications to the basic model to bring it closer to political reality. This is the procedure which we shall follow.

In an economic sense, a major purpose of government is to provide collective goods. Samuelson defines a pure public or collective good as one "which all will enjoy in common, in the sense that each individual's consumption of such a good leads to no subtraction from any other individual's consumption of that good".[26] In other words, pure public or collective goods yield indivisible benefits. Once it has been provided, such a good is equally available to all persons, it being either impossible or impractical to exclude anyone from its benefits.

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[26] Paul A. Samuelson, "The Pure Theory of Public Expenditure," Review of Economics and Statistics (Vol. 36, November, 1954), p. 387.

Few publicly provided services fit this strict definition, of course. In most cases, however, they do deliver a benefit sufficiently general to justify their public provision. To the extent that the exclusion principle can be applied to publicly provided services, such government services as the postal service can be operated as quasi-commercial enterprises. The greater the relative importance of collective, as opposed to individual, benefits the stronger the justification for public administration, public financial support through general taxation, and general public distribution.

The case for general distribution of pure water, for example, can be made on the grounds of the cost of medical services, if on no other grounds. If pure water is confined to a bottled product sold for profit at such a price that not all citizens can afford to buy all they need for internal consumption, some part of the population will be drinking polluted water. Over time they might develop immunities, in which case one could say that an actual advantage has been conferred on them. But during the interval, if they become ill they require medical attention, some of which, in our society, is provided at public cost. If the illness is of a communicable nature and no publicly supported medical attention is provided, they will endanger the health of the rest of the population, i.e. that group which had the ability to pay for the bottled water and purchased it. Here our concern is not the economic justification for the public provision of services, but the economic rationale for the division of political responsibility among levels of government in a federal system.

Consumption--Geographic Range of Benefits

National defense delivers benefits which, broadly speaking, are indivisible among the entire population; the only unit which can be defined to include all beneficiaries of this service is the nation. To the extent that the spillover of benefits, or the long-range benefits, from defense operations in one region extend to the entire population, there is an economic argument for their provision by the central government even if most of their immediate and short-term benefits are confined to one region. In contrast, a local fire department provides protection restricted to the citizens of a fairly specific geographical area. Because of the need for quick and immediate service once a fire has started, the service areas tend to be small. Accordingly, it can be argued that the provision of fire protection is an appropriate local government function.

The examples of defense and fire protection suggest that one economic criterion for the distribution of responsibilities among levels of government is the geographic range of the effects of the service in question, that the boundaries of jurisdictions are set according to the spatial characteristics of benefits and tax-base regions are adjusted to match. Of course this is an oversimplification. The scope of the effects probably will not be the same for any two services so the appropriate geographical unit will be variously defined, suggesting a different collective unit for each service provided. In practice, the organizational costs of instituting such separate jurisdictions preclude most public services from having wholly independent special-purpose political jurisdictions. A common jurisdiction is made responsible for providing several public services, despite the fact that its boundaries do not coincide with those of the most "efficient" geographical area for organizing any given service.

Another important limitation to the oversimplified rule arises from the costs associated with collective decision-making. It is easier and, presumably, less costly for 1,000 people to be directly involved in making a collective decision than for 10,000. Therefore in a democratic system the optimal size of a government unit to provide a given service may be somewhat smaller than that which is large enough to internalize all benefits and costs. That is, in determining the "efficient" level of government to have responsibility for providing a given public good, the range of externalities or spillovers from a collective good is never precisely determinate.[27] This problem of the indeterminacy of spillovers is nowhere more apparent than in the case of education.[28]

Education is one of those public services which provides benefits that are both "individual" and "collective" in nature. It directly benefits the educated individuals and their families in the sense of "cultivating" the individual as well as in the sense of providing economic benefits such as earning ability or the license for entry to certain occupations. There is considerable controversy over the precise measurement of the value of these benefits but there is no disagreement that they are conferred. It is equally likely that all citizens of a community also benefit from the education provided for persons of that community, although there may be disagreement over the measurement of the benefit and the range and timing of its distribution. To some extent, then, educational services are "collective" in the same sense as fire protection. However, unlike fire protection, the spillovers or externalities from the educational services provided in a given community may extend far beyond its own boundaries by virtue of the freedom of individuals to migrate from one community to another. The more people migrate, the greater the externalities or spillovers generated. To the extent that people migrate short distances, spillovers will be greatest in neighbouring communities or kept within the region or the nation. Potential spillovers, positive and negative, may extend beyond the nation.

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[27] Some aspects of the relationship between intergovernmental transfers and externalities are discussed by Albert Breton, "A Theory of Government Grants," The Canadian Journal of Economics and Political Science (Vol. 31, May, 1965), pp. 175-187.

[28] Very little is known about the importance of externalities since very little empirical work has been done. See, however, Burton A. Weisbrod, External Benefits of Public Education: An Economic Analysis (Princeton, N.J.: Princeton University, 1964).

Migration among regions of a country generates "spillout" educational benefits from losing jurisdictions, and "spillin" educational investment benefits to receiving jurisdictions. Thus, taxpayers in Sydney, Nova Scotia, for example, may recognize that, in educating with local funds children who will later migrate to other municipalities, they are, in effect, subsidizing other communities. Recognizing this they may, through their local government, decide to invest just enough in education to satisfy those who will remain in the community. It is possible that Sydney is being subsidized or has in the past been subsidized by other communities to the extent that people educated elsewhere have moved to Sydney to work. Such "spillin" benefits may or may not neutralize the "spillout" benefits and knowledge of the "balance" may or may not have effects on the expenditure decisions of local authorities.

Production--Economies of Scale

The discussion thus far has been in terms of the geographical or spatial range of benefits in the consumption of public services. Another criterion for an economically optimum constitution, or at least a dimension of the problem which should be explored, would be economies of scale in the production of public services. At the practical level much of the discussion of greater centralization of government responsibilities seems to be in terms of achieving greater technical efficiency or, more specifically, of achieving greater economies of scale. In Canada many advocates of Maritime or of Prairie Union stress economies of scale in the production of public services. Similarly, much of the argument in favour of larger units of school administration has been in terms of more efficient production.

The technically efficient unit of production is one just large enough to attain the lowest feasible unit cost of producing a given result. In education, for example, the technically efficient school board would be the one just large enough to achieve given educational objectives at the lowest attainable cost per pupil. A simple constitutional model based on technical efficiency in production would suggest that responsibilities for service functions be allotted to conform to lowest cost considerations.

Despite the logical appeal of such a prescription, there are severe conceptual and empirical limitations which make it even less applicable to the determination of an economically optimum constitution than that based on the spatial characteristics of benefits discussed above. Only the briefest summary of these problems will be attempted here. First, just as the spatial characteristics of benefits derived from no two public services are likely to be the same, similarly no two public services are likely to have the same optimum size in terms of population or area to be served. In addition, due to the absence of empirical work, very little is known about the shape of cost curves for most public services, especially for education. Finally, the strict application of the technical efficiency rule might minimize production costs but it would ignore the demand side: the maximization of individual and social benefits and the spatial distribution of benefits discussed previously. An "efficient" constitution would undoubtedly require attention to both the demand and the supply conditions of public services. Under either prescription, or under one which attempts to combine the two in some fashion, the level of government which is assigned service responsibility may not have a sufficiently large tax base for assumption of full fiscal responsibility.

In summary, from the discussion in the previous chapter we saw that the decentralization of powers and responsibilities, which is characteristic of federal systems of government, is subject to major political and economic costs and gains. On the positive side, formal decentralization of political authority is the only compromise which makes the national union possible. In addition, there is reason to believe that a high degree of decentralization of decision-making in the provision of public services provides a better selection or mix of collective goods and services than that yielded by a highly centralized system; therefore, it more effectively maximizes total welfare. Offset against these positive features are disadvantages associated with a high degree of decentralization which give rise to the need for intergovernmental fiscal adjustments for their alleviation. In terms of the allocation aspects of government activity, two major problems have been identified. The first consists of the imbalances which develop over time between the division of spending responsibilities and revenue sources among levels of government; the second, is the allocative inefficiencies which develop as a result of spillover effects or externalities.

From the discussion of possible prescriptions for an ideal allotment of powers between sovereign levels of government in a federal system we saw that, even in purely economic terms, no simple model is likely to be satisfactory. Conflict between centralization and decentralization, which is endemic to most forms of human organization, is found to a high degree in federal systems of government, which represent a delicate and dynamic balance between the two extremes.

SOME ECONOMIC ASPECTS OF DISTRIBUTION IN A FEDERAL STATE

In Musgrave's public household the function of the Distribution Branch is to take measures to attain the desired distribution of income and wealth.[29] In this section we shall discuss some of the problems peculiar to the Distribution Branch in a federal state and explore the economic case for intergovernmental redistributive payments. To simplify discussion let us assume that we are dealing with a two-level federal union in which there are both centralized and decentralized Allocation

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[29] Musgrave, op.cit., pp. 17-22.

Branches, and that spending responsibilities are assigned between central and regional governments so that spillovers are minimized. In short, it will be assumed that there are no economic grounds for intergovernmental transfers intended to improve the allocation of resources in the public sector, but there may be economic grounds for such transfers as an effort to affect the distribution of public resources among individuals.

As in the case of his discussion of the Stabilization Branch, Musgrave gives important reasons why the functions of the Distribution Branch must be performed primarily at the central level of government.[30] The mobility of population and other resources which provides a strong argument for decentralizing the Allocation Branch, imposes serious constraints on a decentralized Distribution Branch. In fact, at the local level it could entirely defeat the central government's redistribution policy.

The Distribution Branch of a federal state faces one of the most difficult problems inherent in federalism--that arising from the varying fiscal capacities of sublevels of government to carry out their responsibilities within a decentralized Allocation Branch. As we have already stated, regions vary widely in levels of real income, and hence their ability to attract financial capital and enterprise. If prevailing social and political philosophy calls for alleviation of these disparities the responsibility for achieving this rests with the Distribution Branch.

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[30] Musgrave, op.cit., p. 181 and also Oates, op.cit., p. 45.

There seem to be two general approaches to the solution of redistribution problems in federal states, the one adopted depending upon the concept of federalism held. Arguments for and against these responses are best expressed in the well-known Buchanan-Scott exchanges[31] and only a brief summary of these arguments will be attempted here. The position represented by Scott is that as long as the central government treats equals equally and each sub-level of government does likewise, the question of the overall impact of the various government budgets can be ignored. In the first place, "Complete overall horizontal equity is not achieved, chiefly because its achievement is not a primary goal in a federation."[32] Secondly, he takes the position that redistributional transfers are indefensible because they perpetuate a misallocation of resources. The higher levels of social services permitted by intergovernmental redistribution tend to impede the desirable outflow of labour and capital from recipient jurisdictions which would be called for by the marginal productivity principle. Extreme adherents of this position oppose all redistributive activities of a central government.

The opposing position favours a strong central distribution function to achieve horizontal equity. This is the case advanced by

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[31] See James M. Buchanan, "Federalism and Fiscal Equity," American Economic Review, Vol. 40, Sept. 1950, pp. 583-590 and A. D. Scott, "A Note on Grants in Federal Countries," Economica, Vol. 17, Nov. 1950, pp. 416-422. Also see Journal of Political Economy, Vol. 60, Buchanan, "Federal Grants and Resource Allocation," pp. 534-536; Buchanan's reply pp. 536-538. This exchange has also been reprinted in Charles S. Benson (ed.) Perspectives on the Economics of Education, (Boston: Houghton Mifflin Company, 1963), pp. 294-315.

[32] A. D. Scott, "The Economic Goals of Federal Finance," Public Finance, Vol. 3 (1964), p. 251.

Buchanan who extends the principle of horizontal equity, commonly used to evaluate tax systems, to include expenditure benefits from public services. It was he who introduced the notion of a fiscal residuum (i.e. tax bill minus expenditure benefits), claiming that overall horizontal equity in a federal state requires that the fiscal residual for individuals in like circumstances be equalized regardless of where the individuals live. In a federal state the central Distribution Branch can approach its task either by dealing separately with each person, or by making redistributive payments to the lower levels of government. Buchanan's concept of horizontal equity requires individual redistributive measures. In order to equalize the fiscal residual of two people with the same levels of public service benefits, but subject to different tax burdens in their respective provinces, differential federal tax rates can be used. But a less direct (and probably less effective) approximation of horizontal equity can be effected through redistributive payments which equalize the fiscal capacities of all units of government. Both direct transfers to individuals and intergovernmental fiscal transfers are features of central distribution policy in Canada.

In summary, under decentralized government organization, the major distributional inequity arises from differences in fiscal capacity among individual lower level governments and the differential local tax burdens necessary to provide acceptable standards of public services. An additional factor in creating differential tax efforts is varying real or program needs.[33] Of course, in principle, the acceptability of central interference to achieve distribution objectives depends crucially upon the concept of federalism held. When a federation is formed the nation is viewed as a collection of regional, cultural and linguistic groupings of people. However, as time passes, if the federation is successful the concept of national citizenship will emerge and gain in importance relative to regional identities. To the extent such a concept evolves, great distributional inequities among individual citizens will be held to be intolerable and measures to deal with them will be given high priority. If this national identification does not develop, individuals will be left to the "fiscal mercy" of their respective provincial governments.

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[33] In connection with alternative intergovernmental fiscal adjustments, the concepts and measurements of educational need, financial ability and tax effort are dealt with in the next chapter.

THE PERFORMANCE GOALS OF EQUITY AND EFFICIENCY

The purpose of this study is to identify and measure some of the allocational and distributional effects which federal-provincial fiscal arrangements have had on provincial school systems in Canada. Since efficiency and equity are the objectives of the allocation and distribution functions of government, it is appropriate to distinguish between these concepts and discuss some aspects of their implementation. Because the major focus of the study is on fiscal redistribution, the equitable distribution of benefits and costs is our concern.

In economic terminology, efficiency is a precise concept involving the assessment of total benefits in relation to costs, with the objective of maximizing net benefits. The most efficient combination of inputs is that which yields the most benefits for the least cost. There is agreement on the concept of efficiency, but there are several ways in which it can be measured and there is considerable disagreement on the precise measurement of costs and benefits arising from such social services as education.

Although efficiency is a precise technical concept, the concept of equity is more subjective or normative, based on value judgments concerning the fairness of the distribution of benefits and costs. This concept considers who benefits and who pays, the beneficiaries of public services frequently being a quite different group from those who pay for the services through taxes. As was apparent in the discussion of controversies over definition of the concept of equality in education, notions about equity vary according to a person's, or a political party's, philosophy of life and man or political ideology. Moreover their definitions are not stable; they vary over time. Therefore, there are no absolute standards of equity.

The achievement of some desired degree of equity is assumed to be a prime objective of educational policy.[34] A policy to encourage efficiency, on the other hand, is a secondary performance goal in the deployment of resources, one which is part of the means to pursue the objective of educational equity or any other objective. In a strict sense there can be no real conflict between the goals of equity and efficiency. The concept of equity adhered to, and the manner in which it is to be pursued, are matters of public consensus as interpreted through the political process by elected representatives. Once these policy decisions have been made, the desired degree of equity can be defined and policies to achieve it pursued. Controversy is likely to arise over the mix of policies necessary to effect the changes which will ensure equity. There will also be disagreement as to how the degree of equity achieved can be measured. But it is no longer relevant that some other kind of equity might have been achieved in a more efficient manner.

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[34] Economic Council of Canada, Eighth Annual Review (Ottawa: Queen's Printer, 1971), p. 200.

Equity in Sharing Benefits

It is much easier to reach agreement about what educational equity is not than about what it is. Evidence of educational inequalities in Canada, for example, reveals the extent to which equality has not and is not being achieved.[35] For analytical purposes, at least two dimensions of equity (or inequity) may be identified.[36] Horizontal equity refers to fairness in the distribution of benefits or costs among individuals or groups of individuals in like circumstances (i.e. having the same level or levels of income). The second, vertical equity is concerned with equitable or just treatment of individuals or groups in different circumstances.

There are several basic reasons for inequalities in the distribution of educational services in Canada, measured either in terms of inputs or of apparent outputs. Or to be more precise, there are several possible causes of empirically observed educational inequalities in Canada. Three obvious reasons for horizontal inequalities arise from geographical variations in the educational services provided for genetically equally endowed children who have comparable socio-economic backgrounds; the first, variations in needs; the second, resources; and the third, utilization or effort. Discussion of the problems of measuring these concepts forms part of Chapter Four and alternative measures are used in the empirical exercises of Chapter Six.

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[35] An analysis of this kind of evidence is found in Wilfred J. Brown, Interprovincial Educational Differences in Canada: Alternative Measures of Their Underlying Causes and Their Alleviation, Unpublished M.A. Thesis, University of Toronto, 1969. 155 pages.

[36] Musgrave, (1959), op.cit., p. 160.

Educational "needs" consist of the children who should be in school. There is a group legally required to attend school--set at different ages in different jurisdictions at different times in history. By lowering the minimum entry age or raising the minimum leaving age we manipulate the size of the school age population. In Canada, the compulsory school starting age is seven in all provinces except Ontario and Quebec and in Nova Scotian urban schools, where it is six. The minimum school-leaving age is 14 in Nova Scotian rural schools and 15 in all other provinces except Ontario, New Brunswick and Nova Scotia urban schools where it is 16. The school-leaving age in Manitoba may vary between 14 and 16, depending on local bylaws. In addition to this group, there are school attending age groups where participation is voluntary but is achieved by community expectations and societal consensus. Thus, in Ontario there is provision for senior kindergarten (not mandatory for Boards of Education) for 90.5% of the five-year age group and junior kindergarten for 36.4% of the four-year olds.[37] In Ontario there are high participation rates in the upper secondary school grades (beyond age 16--roughly grade 10--the legal age for school leaving). In 1971, for example, 72.7% of the 17, 39.3% of the 18, 11.0% of the 19, and 2.3% of the 20 year olds of the province were in full time attendance in secondary school. Moreover, depending upon the fertility patterns of the population, its age and sex structure, and the levels of migration, the absolute size of the school-age population needing education varies greatly from one local or provincial jurisdiction to another. Since we are concerned with elementary and secondary education, and in Canada these levels are publicly supported (there are few private schools in Canada), we define "resources" as income mainly from taxation. In view of the fact that most taxes are paid out of current income, ability to finance education is best measured in relation to some measure of income. Utilization or effort is the extent to which available financial resources or individual tax bases are exploited for the provision of education.

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[37] The figures quoted in the paragraph are from The Report of the Minister of Education for Ontario, 1971 (Toronto: Queen's Printer, 1972), Table 1.22 p. 58.

There are also vertical educational inequalities among children, served by the same educational jurisdiction, who have different combinations of genetic resources, family backgrounds, socioeconomic status and racial origins. There is undoubtedly a major link between inequalities in income distribution and inequalities in the distribution of formal schooling, and between inequalities in family income and background and in participation in schooling services. In refuting Jencks' claim that reductions in the range of educational attainments have not materially reduced economic inequality among adults, we quoted in Chapter I Coleman's evidence for the United States between 1929 and 1970 and his suggestion that increasing equality of education does have a "strong effect" on increasing equality of incomes. Almost certainly the reverse is also true (i.e. the greater the equality of income distribution the greater the tendency to achieve equality in the distribution of schooling). What is less clear is whether there are limits, whether the relationship holds true only for certain ranges of inequality and whether or not there comes a point where no further equalization of educational attainment will contribute to further income equalization. Certainly there is evidence that the reverse is true--given equal incomes, educational jurisdictions exhibit different levels of educational "need" which are strongly related to community characteristics; and given equal family income, children show different levels of need according to the educational levels of their parents (particularly the mother), to size of family, mother tongue and ethnic origin.

Vertical educational inequalities are undoubtedly aggravated by the decentralized organization and administration of education which we have in Canada. As indicated in the earlier discussion of spillover effects, people in similar circumstances group together and arrange their affairs, individually and collectively, so as to maximize their net advantage in terms of public services.

Equity in Sharing Costs

Since most of the funds for education in Canada are raised by taxation, a consideration of equity in sharing the costs of education actually becomes a consideration of equity in the system of taxation. In the sharing of tax burdens, the normative rule that individuals in like circumstances relative to a specific tax base should be treated equally, has logical validity. All jurisdictions at a given level of government should be able to provide a comparable standard of public service for a comparable average taxpayer burden.

The situation concerning equitable treatment of individuals in different circumstances (vertical equity) is more complicated because there is no widely accepted normative rule. Measures of the incidence of taxation attempt to show how the burden of a tax varies in relation to income. For this purpose income is used because it is considered the best measure of ability to pay and most taxes are paid out of current income. If there is any widely accepted principle in this area (i.e. any common-sense "morality") it is that the burden of taxes should at least be proportional to income and even progressive to some degree, since the first units of income are necessary for subsistence. Regressive taxes are generally held to be socially and economically undesirable, except perhaps by some of the well-to-do.

Implementing the Desired Concept of Equity in Education

Depending upon the concept of equity held (i.e. based on equality of access or equality of results), the goal of equity in sharing the benefits of education might be pursued in a variety of ways: by spending the same amount per child; by ensuring, through regulation, equal participation rates in schooling--either horizontally or vertically; or by varying investments (i.e. manipulating the "process" variables) to ensure equal achievement levels for children of a given measured intelligence.

Once the desired concept of educational equity (or more likely the tolerable level of inequity) has been determined by political consensus, and the best (or least unacceptable) general strategy for pursuing it has been determined by policy decisions--political and administrative--it is essential to translate the decisions into economic and financial terms. Since the causes of educational inequalities are mainly variations in needs and variations in resources to meet these needs, implementation of a program to alleviate inequality depends crucially upon correct measures of the needs and of relative fiscal capacity, and on the way in which the two are related in a distribution formula. The allotment formula is a mathematical function which inversely relates the funds received per unit of program need to the recipients' fiscal capacity per unit of need. If the above statements are correct, then it is technically impossible to implement any effective program to alleviate inequalities until both needs and fiscal capacity have been accurately measured.

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CHAPTER IV

ALTERNATIVE INTERGOVERNMENTAL FISCAL ADJUSTMENTS AND MEASUREMENT OF THEIR ECONOMIC EFFECTS

This chapter will deal with alternative intergovernmental fiscal mechanisms, alternative bases of distribution and the measurement of their economic effects. The discussion has been arranged under three headings, corresponding to three of the major problems (or costs) arising from decentralization. The first consists of aggregate imbalances between the division of spending responsibilities and revenue sources among levels of government. For analytical purposes this may be regarded as an aspect of the allocation function of government. Its solution does not necessarily require redistribution of fiscal resources among sub-units of government.

The second problem, which is the major concern of this study, is that posed by the widely differing levels of real income and program (i.e., educational) needs among sub-units of government which, out of necessity, must impose differing tax burdens in order to provide acceptable standards of service. Generally speaking, alleviation of this so-called distribution problem requires redistribution of resources among the sub-units of government in direct relation to educational or other program needs, and in inverse relation to the distribution of real resources as measured by fiscal capacity. The only government with the potential incentive, if not the moral responsibility and the

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administrative machinery, to undertake redistribution for all regions in a federal state is the central government. Regional or provincial governments may also engage in redistributive activities; but, unless the national government, the one which can internalize all distributional inequities, has the final redistribution, inequalities among provinces will persist. It is also true that, if the national government equalizes among the provinces but the latter do not equalize among their municipalities, inequalities among municipalities will persist.

The third problem area requiring intergovernmental fiscal adjustment is the problem of suboptimal levels or standards of public service. This problem is directly associated with the allocation function of government in that it results from the spillover of costs and/or benefits among communities or provinces. Its alleviation requires action by a higher level of government capable of internalizing or encompassing all of the costs and benefits arising from the provision of a service, and inducing the lower governments to provide levels of service which, by political consensus in the larger constituency, are deemed to be acceptable.

The purpose of this chapter is to identify appropriate intergovernmental fiscal adjustments for overcoming these problems. It is recognized that mechanisms for promoting better fiscal balance, greater distributional equity and greater allocative efficiency are not mutually exclusive. For example, fiscal adjustments for promoting greater aggregate fiscal balance between spending responsibilities and revenue sources may have intended or unintended allocational or distributional effects on the recipients.

TOWARD MORE ADEQUATE FISCAL BALANCE

There are three basic methods by which governments obtain funds: by levying their own taxes; by obtaining revenue transfers from other levels of government; or by borrowing. Borrowing may be an important source of funds for provincial governments, but it is not normally an intergovernmental fiscal arrangement and, therefore, will not be dealt with in this study.[38]

If a government has responsibility for a given function, it has the authority to determine three things: the nature and content of the service; the amount to be supplied; and the method of production. If, in addition, it has the power to impose and collect taxes necessary to raise funds to finance these services and sufficient to meet these responsibilities, it can be said to have both service responsibility and fiscal responsibility.

As we have already mentioned, in Canada as in other federal unions, there are some arbitrary constitutional divisions between service and fiscal responsibilities. Even if the revenue-raising capacity of the governments was adequate when the divisions of taxing and spending authority were made, these capacities have grown at different rates and in different directions over time, with the result that the level of government with the service responsibility does not necessarily, or even usually, have the revenue-raising capacity to carry out its service responsibilities.

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[38] For an excellent treatment of the economic aspects of borrowing by provinces and municipalities see A.W. Johnson and J.M. Andrews, "The Basis and Effects of Provincial-Municipal Fiscal Decisions" in Intergovernmental Fiscal Relations by J.F. Graham, A.W. Johnson and J.M. Andrews, Canadian Tax Foundation, December, 1964, pp. 37-77.

For such a situation there are three alternative solutions: taxing powers can be shifted to match spending needs; service functions can be shifted to the level of government which pays for them; or fiscal arrangements can provide adequate funds to the level of government with the service responsibility. Since the division of spending and taxing authority is usually carefully specified constitutionally between the federal and provincial governments and "protected" thereafter, the common solution to the problem of aggregate fiscal imbalance has been some intergovernmental fiscal arrangement.

Implicit in such arrangements is acceptance of whatever degree of decentralization of tax powers and responsibilities is provided in the constitution and has evolved to a given time. Ideally, mechanisms for solving the adequacy problem would be neutral with respect to decisions by the recipient level of government concerning the mix and standards of public service provided. In addition, they would be distributionally neutral, with funds distributed according to the geographic unit of origin of either the tax base or the actual tax collected.

In short, intergovernmental fiscal mechanisms aimed _only_ at compensating for aggregate imbalances between revenue sources and spending responsibilities have the following goals: (1) to provide the recipient level of government with sufficient total funds to carry out its spending responsibilities; (2) to preserve the existing degree of fiscal independence among units in the recipient level of government; (3) to maintain the existing geographical distribution of income, wealth or tax revenue among units in the recipient level of government.

Of the two major forms of intergovernmental fiscal arrangement, tax coordination and fiscal transfers or grants, tax coordination will receive major attention in discussing this problem. There is one type of grant, the so-called derivation transfer, which may be an appropriate means for alleviating aggregate revenue inadequacy when a shift in taxing power would be either politically unacceptable or inefficient. The reason derivation transfers may be considered a reasonable alternative to tax coordination in striking a balance between spending responsibilities and sources of revenue, is that they merely grant, from the higher level to the lower level of government, taxes levied by the former within the recipients' own borders. In their simplest form derivation transfers provide tax relief but accomplish no redistribution.

Before discussing types of tax coordination, a brief comment will be made on the overall division of tax powers in a federal system. In a federal system the extremes of division are complete separation of major tax sources or joint access to all tax sources. When a constitution is being negotiated rigid separation generally has great appeal, because it avoids administrative duplication and gives promise of minimizing later controversy--particularly if the expected division of revenues is adequate to meet service responsibilities at the time of federation. However, it has the weakness of being inflexible; it cannot easily adapt to changing priorities for public services, to varying elasticities of yield, or to the changing importance of various forms of taxation.

On the other hand, joint access of the two senior levels of government to all revenue sources may, in the absence of cooperation or coordination between them, produce a "tax jungle" with both levels levying the same types of taxes and a disproportionate amount of the tax yield being spent on duplicated administrative costs. Such a situation may lead to very high total tax rates and could produce counteracting fiscal policies. However, if governments with joint legal access recognize the mutual advantages of working together, joint access offers a satisfactory means of ensuring adequate revenue coverage. Broadly speaking, this can be the worst or the best possible tax division arrangement, depending upon the degree of cooperation among the levels of government. Usually such relations are only possible after a federation has achieved a high degree of maturity and stability. Two types of cooperative arrangement, which can promote the advantages of joint access and thereby contribute to better fiscal balance, are tax rental and tax sharing.

Tax rental requires a regional government to refrain from exploiting a tax source to which it has legal access, in return for a negotiated percentage of the collections made within its region by a higher level of government. The primary advantages of such agreements are that they reduce costs of tax administration and compliance, permit greater horizontal equity in the treatment of taxpayers among sub-units of government, and permit a central government to pursue economic policies with less likelihood of having them neutralized by the provinces. The proceeds of tax rental agreements, of course, are derivation transfers in that, in the absence of equalization or stabilization clauses, they will be proportionate to the revenue derived from the recipient's own jurisdiction.

These rental agreements have some serious disadvantages. First, the recipient governments forfeit a degree of autonomy in that they are not free to vary the tax base or the tax rate. Secondly, tax rentals violate the so-called principle of fiscal responsibility, namely, that each government should be accountable to its own electorate for its taxing and spending decisions.[39]

Tax rental constituted the major federal-provincial fiscal mechanism used in Canada between 1942 and 1962. Early in World War II, the federal government persuaded the provinces to relinqu[illegible] their own personal and corporation income tax fields in return for unconditional "rental" payments. Possession of undisputed control of the income tax permitted the federal government to pursue the war effort to the fullest extent. Rental agreements were renegotiated every five years and eventually covered the period 1942 to 1962 using rental formulae which became progressively more generous to the provinces from period to period. Quebec refused to participate in tax rental on grounds that the concept was incompatible with her constitutional rights and status under Confederation. This, coupled with the other disadvantages noted above, led in 1962 to the replacement of tax rental by a form of tax sharing.

Tax sharing or coordinating arrangements have many of the advantages of tax rental agreements while overcoming the major disadvantage for the recipient. After negotiating a mutually acceptable, identical tax base, both levels of government are free to vary the rates as they choose. The central government collects the total tax and, except for the agreement of a common tax base, there is no erosion of the autonomy or political responsibility of governments with respect to variations in rates of taxation.

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[39] For example, it may be argued that the political costs of raising funds should fall on the same level of government which has the political benefits of spending the funds. See Richard Bastien, Fiscal Federalism in Canada: Decentralization in the Modern State, a paper prepared for a meeting of The Society of Government Economists, Toronto, December 28, 1972, p. 5.

However, to the extent that governments may make contradictory changes in tax rates, such agreements might impair the central government's ability to serve stabilization objectives for which it has primary responsibility. Under a progressive income tax, revenue declines more, proportionately, than the tax base during recessions and increases more, proportionately, than the tax base during periods of expansion or inflation. This built-in flexibility of progressive tax rate structures is a highly desirable automatic feature of counter-cyclical fiscal policy. However, it may produce recurring shortages and gluts in lower-level budgets which may be experiencing relatively stable demands for services. In this event, considerable pressure will be exerted on lower-level budgets to change tax rates in such a manner as to neutralize this built-in flexibility as well as offset the counter-cyclical rate changes or other measures enacted by the central government.

Under the 1962-67 tax sharing agreement, as it applied to personal income tax, the federal government imposed a national "basic tax" which it then reduced or abated by a negotiated percentage in order to "make room" for the provincial taxes. For the first time, in 1962, the federal government and the provinces also entered into formal tax collection agreements under which the federal government agreed to collect, free of charge, provincial personal and corporate income taxes without limiting the amount collected. As a result, provinces were free to tax at rates beyond the federal abatement on condition that the provincial and federal tax bases were identical. All provinces except Quebec chose to have their personal income taxes collected by Ottawa, and all provinces except Quebec and Ontario chose to have their corporation income taxes collected by Ottawa.

Throughout the series of tax rental and tax sharing agreements in Canada, there has been an incessant struggle by the provinces to increase their share of the total income tax collections which has been successful. This is documented in the next chapter. Here we merely note that the successive federal abatements of income tax in favour of the provinces were the major factor enabling them to respond to demands for social services and, in particular, to assume a much greater share of the costs of education.

In addition to the basic division of tax revenue, there are a number of supplementary mechanisms for ensuring flexibility in adjusting sources of revenue to changed spending priorities: tax credits; tax deductions; revenue guarantees; and payments in lieu of taxes.

Difficulties arise when we attempt to estimate empirically the adequacy of the sources of provincial-local revenue to meet provincial and local responsibilities for educational service.[40] The situation is dynamic in that the scale of public priorities for various services is constantly changing and the appropriate division of revenue-raising powers also changes. If one could assume that the trend of expenditures of the two major levels of government, federal and provincial-local, accurately reflect the public's scale of priorities, it would then be possible to determine the past consequences of these trends in terms of changing revenue sources. An appropriate evaluation of the relative success of federal-provincial fiscal arrangements would be to examine the long-term trends in governments' balance of expenditures and revenue sources. Another approach, would be to analyze by function the total expenditure by the federal and provincial-local levels of government. As previously stated, in the past twenty-five years the provincial and local governments in Canada have needed greatly increased revenue to cover the unprecendented growth in demand for services such as education, health, welfare and highway construction. However, over the same period of time the federal government's need for revenue has not been stimulated by a comparable growth in demand for such nationally administered services as defense and foreign affairs but rather by the demand for individual and governmental transfers.

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[40] The term "provincial-local" as used in this dissertation refers to the consolidated revenues or expenditures of provincial governments and their local governments, after the elimination of transfer payments between them.

Given the apparent reluctance in Canada to transfer service responsibilities from the provincial to the federal government, the adequacy objective is reduced to the following questions. How successful were federal-provincial fiscal arrangements in effecting the required shift in financial resources? What implication does such a shift have for educational policy? What was the effect of these fiscal policies on the financing of education? To answer these questions we shall examine unconditional transfers made under the successive five-year federal-provincial tax sharing agreements.

Throughout this part of the study, attention will focus primarily on derivation transfers rather than on transfers based on differences in fiscal capacity or fiscal need. The latter are discussed in connection with the achievement of greater distributional equity below.[41]

TOWARD GREATER DISTRIBUTIONAL EQUITY

Fiscal transfers or grants can be analyzed from many points of view--i.e. according to their general characteristics, their effects on donors and recipients, or to their bases for distribution. In this section of the chapter we shall discuss their bases and the measurement of their redistributive effects.

A grant is a one-way transfer of money, goods or services from a donor to a recipient, with or without conditions as to how the proceeds will be used. In this study, the term is used to denote a transfer of funds from one level of government to another.

There are important differences between grants and the tax coordinating devices already described. Tax coordination involves the division of the proceeds of taxes to which both parties have legal or traditional access, with no conditions as to how the funds should be spent. Grants are not based on any particular tax; it is not necessary that they involve conditions concerning how the funds may be spent, but they quite frequently do include specific conditions.

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[41] The distinction between derivation and redistributive transfers, while analytically useful, is arbitrary; in some cases, it will be difficult to maintain since some conditional transfers contain elements of derivation, and fiscal capacity or fiscal need transfer.

There seem to be as many classifications of grants as there are writers on the subject, both in the literature on public finance and in that dealing with education finance. The variety of terminology is more confusing than helpful. The essential properties and characteristics of fiscal transfers seem to be covered by the following list:

1. Level of Transfer (usually downward, from the higher to the lower level)

    federal to provincial
    federal to local
    provincial to local

2. Intended Use of Proceeds

    general purpose (for all public services, i.e. to general revenue)
    functional (for one type of service; e.g. for elementary and secondary education)
    categorical (for one item of expenditure; e.g. textbooks)

3. Objective(s) of Donor

    fiscal balance between spending needs and revenue means
    redistribution to equalize tax burdens
    redistribution to equalize unit costs
    stimulation of provincial effort to provide minimum standards of service

4. Conditions Imposed on Recipients

    unconditional
    conditional
    other (i.e. minimum standards)

The first two headings are self-explanatory; the third we have already considered; the fourth requires brief comment.

By "conditions imposed on recipients" we refer to the rules or controls under which the recipient government qualifies for the grant. At one extreme there are rules so stringent that the recipient becomes simply the administrative agent of the donor; at the other extreme the grants are so unconditional that they are spent according to priorities quite independently decided by the recipients. Conditional grants are consistent with the goal of centralized decision-making and are used primarily to achieve allocation objectives of the donor arising from external benefits. Unconditional general purpose grants, on the other hand, are consistent with the goal of decentralized decision-making and they interfere least with the recipients' freedom to define spending priorities. The degree of conditionality embodied in a grant scheme is a major determinant of its economic effects on the recipient.

Non-recipient politicians often mistakenly consider transfers from a central government to regional governments as transfers from region to region. In fact, when a federal government engages in redistributive activity, either directly through spending programs or indirectly by means of redistributive fiscal transfers, it is using its own revenues, raised from nationally uniform tax structures, to pursue national objectives. It is not merely acting as a middleman or financial intermediary for transfers among sub-units of government.[42]

Bases of Redistribution

The extent of intergovernmental income redistribution in general, and redistribution with respect to a specific public service in particular, are political decisions. Once a decision to effect redistribution has been made, the extent to which the desired degree of redistribution is achieved depends upon the correct identification and measurement of relative differences in (1) real or program need

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[42] James H. Lynn, Federal-Provincial Fiscal Relations, Study No. 23 of The Royal Commission on Taxation (Ottawa: Queen's Printer, 1967), pp.23-4.

(2) fiscal need (3) fiscal capacity, and (4) the mathematical function which interrelates these variables and specifies the allotment formula. In other words, for redistribution to occur there must be recognition of differences in fiscal capacity to meet needs, and some means of distributing funds in an inverse relation to fiscal capacity per unit of real and/or fiscal need.

In the most general sense, the basic unit of need for all public services is presumed to be the individual citizen. Moreover, there is a presumption of equality of need among individual citizens, based in part on the political institution of "one person, one vote" and in part on the indivisibility of benefits from pure public goods. The simplest measure of the total need for all public services, therefore, is total population or, in assessing relative needs for all public services, the relative sizes of populations. The measurement of real needs for specific public services may be estimated by reference to objective population characteristics relevant to the service--such as age composition, family size--or to subjective judgments.

The concept of real educational need, in common with the general need for public services, can be viewed in terms of demographic variables. Expected live births per thousand population is a crude measure of future educational need. Present need for education at public expense may be stated by reference to the numbers of children in the age groups of compulsory schooling. As was documented in the previous chapter, the predominant range of compulsory schooling in Canada is 6 to 16 years of age but, it is commonly conceded that there should be high participation in some form of publicly funded education from age 5 to 18 or 19.

Refinements in measures of real educational need attempt to relate the numbers to be educated to total population or to that segment of the population whose economic efforts support education, i.e. the active labor force or those in the labor force whose annual incomes are above some arbitrarily chosen "poverty line". The latter measure has the advantage that it recognizes interprovincial differences in income distribution by excluding those whose incomes fall below an assumed subsistence level. For a wide variety of geographic, demographic, social and economic reasons[43] costs per unit of real need will vary among regions and communities. The concept of fiscal need recognizes differences in real need, and differences in per capita costs of providing for these needs.

Difficulties in measuring differences in real educational need among children and of devising acceptable price indexes for education have meant that the concepts of real educational need and fiscal need, except in the most simple cases, have yet to be combined in an ideal manner. The use in grant allocation formulae of the concept "weighted pupil" is an example of the attempt to recognize differences both in real and fiscal need in a workable manner. Although a detailed investigation of provincial differences in fiscal need in education is of great importance, it is outside the scope of this thesis. Therefore, an acknowledged limitation of the empirical work of this study is that, for the most part, it avoids the problem of measuring relative differences in fiscal need. We would contend, however, that this limitation does not interfere with our major objective of examining the redistributive impact which federal direct spending and unconditional fiscal transfers have had on the financing of elementary and secondary education.

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[43] E.g., population size and distribution, extent of urbanization, degree of ethnicity and levels and patterns of income distribution.

The concept of fiscal capacity is of fundamental importance in assessing the magnitude of the distribution problem among governments, and devising intergovernmental arrangements for its alleviation. Therefore, we shall discuss in some detail the relative merits of the major approaches to measuring fiscal capacity, in general, and relative ability to finance education, in particular.

First, we should distinguish between the concepts of fiscal capacity and relative ability. The fiscal capacity of a government consists of the financial resources on which it can draw to provide all of the public services required by its people. Ability, on the other hand, refers to the relative fiscal capacities of governmental jurisdictions of varying size. To convert measures of fiscal capacity into measures of relative ability, the gross fiscal capacity data are reduced to a per capita basis by applying a measure of program or fiscal need, usually a demographic measure. The choice of demographic variable depends upon whether ability to finance all public services is being measured or ability to finance a particular service, such as education, offered primarily to certain groups. Relative ability to finance all public services would relate to fiscal capacity per head of population. If fiscal need as well as real need were taken into consideration, relative ability to finance education would relate to fiscal capacity per weighted school age child.

Two distinct approaches are possible in considering the concept and measurement of fiscal capacity: (a) it may be viewed as the ultimate pool of resources on which a government could draw by imposing taxes, or (b) it may be viewed as the revenue which would result from applying a uniform representative tax rate to the selected tax bases in different jurisdictions. We shall consider both.

The appeal of the income approach as a measure of fiscal capacity is that it is simple, readily available and easily understood. Therefore, income currently produced is the most common measure of fiscal capacity. It provides a single measure of the ultimate source of revenue for taxation and implies no judgment concerning the cultivation of this pool of resources. Despite its simplicity and logical appeal, the income approach has some serious conceptual and practical shortcomings as a measure of fiscal capacity.[44]

The most readily available measure of income received on a provincial basis is "personal" income, a widely accepted concept in national income accounting.[45] In addition to returns to the various factors of production, personal income includes transfer payments to persons from various sources but excludes undistributed corporate profits, corporate profit taxes and contributions to social insurance.

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[44] For an excellent analysis of alternative measures of fiscal capacity see Advisory Commission on Intergovernmental Relations, Measures of State and Local Fiscal Capacity and Tax Effort, A Staff Report (Washington: Government Printing Office, 1962). Designated hereinafter as ACIR Report, M-16.

[45] The concept of personal income and methods used in Canada for its measurement and allocation among provinces is provided in DBS National Accounts Income and Expenditure 1926-1956 (Ottawa: Queen's Printer, 1960), pp. 110-16, 139-55, 173-74.

Although these latter items are part of net income, they are not paid out to individuals and, hence, are excluded from personal income.

Personal income has been the measure most frequently used to assess variations in fiscal capacity and also to assess relative ability to support education. Because of its widespread use in studies of the economics of education, its limitations as a measure of fiscal capacity are particularly relevant. The most serious is its failure to reflect potential revenue from taxes imposed on absentee owners and other non-residents such as tourists. In an open economy, not all income produced is received by residents of the jurisdiction, nor is all income received produced in the jurisdiction. The main reason for relative differences between income produced and income received among the provinces of Canada is the unequal geographical distribution of exploitable resources and the varying extent to which taxes imposed on natural resource production are borne by non-residents. To the extent that income produced by natural resource development is not received by residents of the jurisdiction of origin and, therefore, not included in domestic personal income, fiscal capacity is understated.

A possible solution to this problem is to use income *produced* as a measure of fiscal capacity rather than income *received*. Measurement of income produced requires aggregating values added at each stage of production and raises statistical problems which seem, thus far to have defied solution. In any case, estimates of total income produced are not available for Canada on a provincial basis.[46]

Since the chief source of understatement of taxable capacity, using the income approach, is the exclusion of the value added to natural resources physically located in the jurisdiction but owned by non-residents, a partial solution might be effected by adding the value of natural resource production to personal income. However, this would not provide a good indication of taxable capacity because of the differences in the potential per dollar of production among the various resource-producing industries. For example, most oil resources provide considerably more tax potential per dollar of value added than do most mined resources.[47]

Overcoming this difficulty would require weighting of the values added in the various natural resource industries to reflect the amount of revenue which could be extracted from a dollar of value added in each industry. Another example of the failure of personal income to reflect potential revenue from taxes which are exported is provided by the provinces which have a large share of the tourist industry. Tourists pay a larger share of public income derived from general sales taxes, gasoline taxes and alcoholic beverage taxes in some provinces than in others. While the export of taxes to some extent will be offset by the import of taxes, imports and exports will not balance in most jurisdictions. In any case, variations in the balance between taxes imported and taxes exported would not be reflected in variations in personal income.

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[46] Provincial distribution of estimates of value added by selected goods-producing industries are available from Statistics Canada, Survey of Production (Ottawa: Queen's Printer, Cat. No. 61-202). See also James H. Lynn, Comparing Provincial Revenue Yields, Canadian Tax Foundation, Canadian Tax Papers, No. 47 (Toronto: The Foundation, 1968), p. 15.

[47] Ibid., p. 17. See also A. Milton Moore and J. Harvey Perry, Financing Canadian Federation (Toronto: Canadian Tax Foundation, 1953), p. 70 and also Jesse Burkhead, Public School Finance--Economics and Politics (Syracuse, New York: Syracuse University Press, 1964), p. 278.

Another weakness of personal income as a measure of fiscal capacity is that it fails to recognize differences in income distribution. Under a highly progressive income tax structure, differences in income distribution result in varying proportions of personal income being drawn off in taxes. Thus, two provinces with the same average per capita income and the same tax schedules may vary substantially in relative fiscal capacity because of differences in income distribution. The relevance of income distribution has received some attention in the literature.[48] Examination of this literature suggests that, in general, if income is to be used as a measure of fiscal capacity, a median value is preferable to a mean or per capita value, and that some measure of dispersion of income should also be included.[49]

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[48] For example, see Thomas P. Hopkins, "Income Distribution in Grant-in-Aid Equity Analysis," National Tax Journal XVIII (June, 1965), pp. 209-13. See also Glenn W. Fisher, "Interstate Variation in State and Local Government Expenditures," National Tax Journal XVII (March, 1964), pp. 57-74, and Lynn (1968), op.cit., pp. 19-21.

[49] A median is preferable to a mean (per capita) measure of central tendency on *a priori* grounds because, as a positional value, the median is distorted less by extreme values than the mean. Thus, two jurisdictions with identical mean personal incomes may have widely differing median incomes depending on the degree of distributional inequity. Horowitz, replying to Hopkins, demonstrated that, depending on the degree of progression or regression in state tax structures, differences in income distribution may affect fiscal capacity in different directions and to differing degrees. See Hopkins, op.cit., pp. 212-13, and Ann R. Horowitz, "Income Distribution Grants-in-Aid Equity Analysis," National Tax Journal XVIII (June, 1965), pp. 439-41.

In Canada, the situation is complicated by recent evidence that the combined incidence of provincial and municipal taxation is quite steeply regressive for incomes under $5,000 and virtually proportional for incomes above $5,000.[50] An empirical assessment of the differential effects of distributional inequalities and the varying degrees of progression or regression on median or per capita personal income as a measure of fiscal capacity is outside the scope of this study. However, the available facts do support the view that distributional differences and varying degrees of progression or regression in tax structures do impair per capita personal income as a measure of relative fiscal capacity.

The problems associated with the influence of income distribution can be overcome to a degree by using a third measure of income as an alternative to personal income or income produced, namely, family or household income statistics. While use of family income statistics would not overcome all shortcomings of the income approach, it does facilitate more accurate interprovincial comparison than personal income per capita. More elaborate statistical tests of dispersion may also be applied to income distribution series and the results incorporated into an index of relative fiscal capacity.[51]

There are other weaknesses in the use of the income approach in general or of personal income as bases for measuring relative ability. One weakness, closely related to that arising from variations in income distribution just discussed, arises from the assumption, implicit in the income approach, that each dollar of personal income is equally available to government as a source of tax payments. To the extent that all income below a minimum level will be needed for subsistence it is unavailable for direct taxation and it may be argued that income below this level should not be included in estimating taxable capacity. Where data showing income distributions are available this problem, which is related to the declining marginal utility of additional income, may be offset by excluding incomes below a minimum level in calculating relative ability. Where personal income data are used, subsistence requirements are recognized by a minimum per capita deduction. Because of distortions created by incomes from temporary and part-time employment, and more than one income per household, it would be preferable to base a subsistence allowance on family income. Unfortunately, complete family income statistics are available only for Census years.

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[50] Canada Royal Commission on Taxation, Study #2 (Ottawa: Queen's Printer, 1966), Table 2-3 and Chart 2-1.

[51] Hopkins, op.cit., pp. 209-11, uses "Gini Coefficients" as indexes of the relative inequality of distribution of incomes within the various states of the United States. The Gini coefficient is defined as the proportion of the triangular area on a Lorenz diagram which falls between the Lorenz curve and the diagonal.

The difficulties of adjusting for the differing extent to which provincial taxes are borne by non-residents together with variations in income distribution are themselves sufficient grounds for discounting the value of personal income as a measure of taxable capacity. This applies whether income is the basis for making fiscal capacity adjustment payments or the basis for distributing funds in respect of a particular service such as education.

Another technical and statistical shortcoming of the income approach to measuring taxable capacity arises from the necessity of weighting various components of personal income to reflect their relative tax potential among provinces. The need for adjusting to the varying tax potential of different resource-producing industries has already been mentioned. Finally, personal income as compiled by Statistics Canada includes elements which are not subject to any form of taxation, for example, imputed rent on owner occupied dwellings and the imputed value of home-produced consumption goods, the proportions of which will vary to some degree from province to province.

Refinements and adjustments in the income approach to measuring fiscal capacity recognize progressively more differences among the economic structures of the provinces and bring the measurement of fiscal capacity progressively closer to measurement of the relative differences in actual tax potential of the provinces. To some degree the "representative" tax system approach recognizes such differences. Its proponents claim it is theoretically possible to design a representative tax system which recognizes, implicitly and explicitly, differential tax potential, differing levels of resource endowment, relative sizes of other components of the total tax base and current political judgments concerning their cultivation.[52]

The most direct approach to measuring fiscal capacity in terms of a representative tax system evaluates the bases available for taxation in each province and then estimates the amount of revenue each province could raise if all applied uniform tax rates. In 1962, the Advisory Commission on Intergovernmental Relations in the United States devised such a system.[53] It selected from among current and local tax sources those which were taxed in a sufficient number of states to account for (a) half of the United States' population or (b) half of the United States' tax base.[54] Using the same technique, Lynn attempted to devise a representative tax system for Canada in 1963-64.[55] The major weakness of Lynn's system was that it excluded local taxation (i.e. the property tax), rendering the results of little value in developing measures of relative provincial-local ability.

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[52] Lynn (1968), op.cit., pp. 23-27.

[53] ACIR Report, M-16, op.cit., Chapter 3.

The representative tax system as a means of measuring fiscal capacity has the advantage that it attempts to recognize variations in the economic structures and the prevailing tax systems of the provinces. However, it also has some weaknesses. The relative fiscal capacities of provinces and communities are strongly influenced by the type of tax system chosen as representative of all provincial-local systems; if the uniform system relies heavily on property taxation, provinces with high property values appear to have high fiscal capacities. If it relies heavily on sales taxes, provinces with high volumes of sales will appear to have high fiscal capacities. Obviously, the more variation there is in actual tax structures, the less accurately a representative tax system will reflect actual differences in fiscal capacity.

Unfortunately, the refinements which might be introduced to overcome shortcomings of the income approach as a measure of fiscal capacity tend to destroy its major virtues, namely, its simplicity and general acceptability. Moreover, essentially all are attempts to recognize the economic structures of the various provinces and their actual taxing practices. Thus, the more one modifies the income approach, the closer one comes to measuring actual tax bases rather than measuring the ultimate pool of resources out of which taxes are to be paid. The application of one or a set of actual or hypothetical tax rates to provincial measures of fiscal capacity produces estimates of yield. The closer the measure of income used to estimate fiscal capacity resembles the actual tax bases of the various provinces (i.e. the more refinements are introduced), the closer the revenue yields obtained by applying a given tax structure will resemble the actual pattern of provincial tax yields.

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[54] Ibid., p. 32

[55] Lynn (1968), op.cit., Chapter 5.

There is a whole spectrum of measurements of fiscal capacity ranging from personal income as the sole measure to the actual current tax and non-tax revenues available in a given period. The representative tax system approach may be said to be a midway point in the spectrum. The choice of measure used depends on the extent to which one is willing to recognize one or both of the following sets of factors: the economic structure of the provinces; and the actual tax structures in the various provinces.[56] The major elements in interprovincial differences in the economic structures of the provinces have already been discussed. It might be argued that refinements in the income approach to take account of actual provincial and local tax structures are not legitimate because these structures have been established by the provincial and local governments themselves and are not beyond their power to change. On the other hand, it may be argued that actual tax structures are the cumulative result of historical developments and may be very difficult to change in the short run. Peculiarities in tax structures may, therefore, be as relevant to the fiscal capacity of a given province as is the aggregate income out of which taxes are paid or differences in economic structures.

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[56] By actual tax structures is meant the extent to which each province cultivates various tax sources available to it.

Which measure of fiscal capacity, or more precisely which among those considered, provides the most legitimate base for use in redistribution programs? We have tried to show that the concept of fiscal capacity is elusive and that specific techniques for measuring it tend to be arbitrary and fraught with conceptual and practical difficulties. Except to register a preference for measures which recognize both variations in economic structure among the provinces and variations in taxing practices, we have not attempted to resolve the arguments for and against the modifications of the simple income approach.

Perhaps the best solution is to accept the procedure followed by the ACIR and use several measures of fiscal capacity, representing varying positions in the possibilities previously discussed.[57] In fact, this was the procedure followed in the empirical measurements described later in the dissertation. If the Canadian exercise follows the ACIR experience the same provinces will have the very low and high fiscal capacities regardless of which index is used. It is in the middle range where substantial variations are found and where the selection of the measure of fiscal capacity may have crucial results for the relative position of the province for purposes of fiscal adjustment.

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[57] ACIR Report, M-16, op.cit., pp. 54-55.

Alternatives in Intergovernmental Fiscal Redistribution

This section lists briefly the types of intergovernmental fiscal transfers whose primary purpose is to distribute funds in direct relation to real or program needs, in inverse relation to fiscal capacity or, ideally, in direct relation to fiscal needs (i.e. recognizing unit cost differences). Fiscal transfers whose primary purpose is to stimulate change in the allocation of resources in the recipient jurisdiction will be dealt with later. Grants to induce reallocation will typically be functional or categorical and will to some degree be conditional since their primary function is to optimize the allocation of resources for provincial or local functions. Derivation grants which are typically general purpose and unconditional were discussed in connection with policies to achieve better fiscal balance, their primary purpose being general support or tax relief. Again, it must be stressed that each of these prototype grants often has intended or unintended effects which influence one of the other functions of government.

One of the simplest types of grant is the population based grant which distributes funds in direct relation to population or some population variable. In the case of education, such a grant would be distributed in direct relation to school age children, enrolment, pupils in attendance, teachers or classrooms. The assumption underlying population based grants is that needs are proportional to the number receiving service or involved in the provision of the service.

In their simplest form, such grants recognize neither differences in fiscal capacity nor unit cost differences. Where there are wide variations in fiscal capacity, simple population-based grants will accomplish some redistribution with respect to fiscal capacity since population is usually more evenly distributed than income.

The revenue equalization grant is a fiscal transfer which attempts to compensate for differences in relative ability to finance public services as measured by fiscal capacity per capita. It bears no explicit relationship to the amounts raised by the donor in the recipient jurisdiction.

As we have already indicated, fiscal capacity may be measured in terms of income, wealth or the yield of a representative tax system. The degree of redistribution is not inherent in the nature of the grant; per capita fiscal capacity may be raised to any level which is deemed socially desirable or politically acceptable. Moreover, we shall show later in the study that the degree and total extent of fiscal equalization varies according to the measure of fiscal capacity used.

The population based grant is addressed to differences in simple program needs; while the revenue equalization grant to differences in the ability to raise revenue. The fiscal need grant is concerned with both of these but, in addition, would compensate for unit cost differences caused by such factors as geography, population concentration and density, and price levels. Fiscal need grants typically compensate for differences between the recipients' spending need for a specific service and its capacity to raise revenue by means of a uniform levy. Although this is the grant most favoured in the literature, fiscal need grants have seldom been fully implemented because of the immense problems involved in developing accurate and politically acceptable measures of fiscal capacity and fiscal need.[58]

Other Means of Achieving Distribution Objectives

Since the major interest of this study is the role which recent intergovernmental fiscal mechanisms have played in financing Canadian education, we have spent some time describing revenue equalization transfers as a method of achieving fiscal redistribution. However, there are a number of other ways of ensuring comparable standards of public services with comparable tax burdens. Here we shall describe three and comment on their feasibility as alternatives to revenue equalization transfers.

A shift in spending responsibilities from the provinces to the federal government is one response to the fundamental inadequacies of provincial governments to carry out their service responsibilities. To implement this, a differential division of spending powers among provinces would have to be effected. Uniform federal tax rates would prevail but the range of services administered by the federal government would be relatively narrow in high-income provinces and extensive in low-income provinces. The criterion for deciding which powers would remain under provincial control could be the probable geographical range of benefits. For example, the services most likely to be federally provided in low-income provinces would be secondary and post-secondary education and student aid to low income groups. The federal government would assume responsibility for matching standards of services whose benefits are national in scope. The low-income provinces would then be free to concentrate their limited fiscal resources on bringing elementary education services, with their more limited ranges of benefits, up to the standards prevailing in high-income provinces.

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[58] In a rigorous analysis of various types of fiscal transfers, Richard Musgrave examined seven possibilities for calculating intergovernmental transfers. Despite the problems involved, this is the one he favors. See Richard A. Musgrave, "Approaches to a Fiscal Theory of Political Federalism," In Public Finance: Needs, Sources and Utilization (Princeton: Princeton University Press, 1961), pp. 97-122.

Such a scheme has some logical appeal but it would raise a number of serious political and economic problems. It would be difficult to persuade one province to accept fewer spending powers than the other provinces. It would probably be viewed by all provinces as a violation of the constitutional division of powers on which the federation rests. There could be considerable administrative difficulty in deciding the division of responsibilities in the case of each individual province and in ensuring comparable standards of services. On balance, it seems highly unlikely that a differential division of spending responsibilities could be a reasonable alternative to revenue equalization transfers as a means of achieving comparable levels of support for provincial-local services with comparable tax burdens.

Consolidation of existing provincial boundaries into larger provinces or regions is another alternative which would offer the possibility of reducing interprovincial differences in per capita income, standards of public services and tax burdens. A complete redefinition of provincial boundaries would be necessary to achieve a close match between tax bases and expenditure needs in the redefined provinces.

Although the consolidation of some units, or the complete revision of boundaries among coordinate units of government is conceptually appealing and, indeed, has been widely implemented within provinces, there seem to be almost insurmountable difficulties to such a procedure for alleviating interprovincial disparities.[59] Provincial boundaries, redrawn on the basis of income distribution, would violate existing provincial loyalties based, in some cases, on long-standing linguistic and cultural differences. Clearly, any fundamental revision of major political boundaries which have a constitutional basis is out of the question as a solution to fiscal problems.

While each of the alternatives to revenue equalization transfers thus far described has some conceptual appeal, the administrative and political problems they create render them unworkable in a well-established federal union with strong regional loyalties buttressed by constitutional provisions. On the other hand measures to alleviate interprovincial variations in what is, for practical purposes, the ultimate tax base, namely per capita income--as opposed to measures to equalize tax revenues--not only are feasible, they are being used extensively in most federal unions, including Canada. The primary device for alleviating interprovincial differences in per capita income is the transfer payment made to an individual. It would be technically possible, by means of a wide variety of personal transfer schemes, to equalize the personal incomes of all the provinces. The rise of the welfare state in recent decades has contributed to a lessening of intergovernmental differences in per capita personal incomes, thereby reducing the need for intergovernmental revenue equalization transfers.[60] Due to the uncertain incentive and other economic effects of direct individual transfer payments, it is doubtful that they could ever be used extensively enough to provide equivalent intergovernmental tax bases or that they could become a perfect alternative to intergovernmental transfers. However, federal transfer payments to individuals will continue to alleviate interprovincial differences in per capita tax bases and they may, with the introduction of measures such as the guaranteed annual income, increase in relative importance.

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[59] Maritime union and Prairie union, particularly the former, have received considerable attention in recent years and provincial politicians meet from time to time to explore their political and economic implications. However, a major consolidation of existing services seems unlikely in the foreseeable future. Because all of the Atlantic provinces are low-income provinces, such a consolidation would, in itself, do little to achieve greater proportionality between the tax base and the spending needs of the total region relative to the rest of Canada.

A more fundamental and long-term approach to distribution objectives than any of the intergovernmental arrangements or individual transfers discussed thus far would be comprehensive regional development programs to raise growth rates in low-growth areas, thereby bringing returns to factors of production, labour in particular, into line with other regions of the country. Such schemes involve a many-pronged attack on the cycle of low-quality factors, low-level incomes and inadequate social service. As noted in Chapter III regional development policies and strategies are beyond the scope of this dissertation. We merely point out here that low standards of social services, such as education, are both the cause of, and the effect of, low levels of real income.

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[60] Awareness that intergovernmental fiscal adjustment is not the most direct way to improve the lot of the individual, coupled with obvious self-interest, caused British Columbia, in 1969, to propose a guaranteed annual income or negative income tax as an alternative to unconditional payments to provinces such as "the resource-rich, central province of Quebec".

Assessment of the Fiscal Redistribution Objective[61]

Regardless of which measure of program or fiscal need is used, fiscal redistribution requires an inverse relationship between the amount received per unit of need and fiscal capacity per unit of need. A province's allotment ratio (A) may be defined as the ratio of its allotment of a federal appropriation per unit of need to the weighted average allotment per unit of need for all provinces. Similarly, a province's fiscal capacity ratio (C) may be defined as the ratio of its fiscal capacity per unit of need to the weighted average fiscal capacity per unit of need for all provinces.

The simplest mathematical form of allotment ratio is a linear expression $A = (1-KC)$; where A is a recipient's allotment ratio per unit of need, C is the same recipient's fiscal capacity ratio and K is a constant. This is one expression of an allotment ratio per unit of need. There are, of course, many non-linear expressions which could be identified.

In the empirical exercises in Chapter VI, in addition to this simple linear expression, two non-linear allotment functions will be used to serve as alternative benchmarks against which to evaluate the redistributive implications of federal spending programs and federal-provincial fiscal arrangements on elementary and secondary education. Regardless of whether the function is linear or non-linear, a recipient province's share, Si, of the amount appropriated by the federal government can be expressed as $Si = \frac{AiEi}{\sum_{i=1}^{n}(AiEi)}$; where Ai is the province's allotment ratio and Ei the province's total units of educational need (i.e. weighted children of school age).

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[61] Some of the ideas developed in the following discussion were suggested by the following article: Bruce F. Davie and Joseph J. White, "Equalization Alternatives in Grant-In-Aid Programs: Alternative Formulas and Measures of Fiscal Capacity", National Tax Journal, June 1967, pp. 193-203. The Davie and White analysis dealt with some redistributive consequences of the Vocational Education Act of 1963 in the United States.

The empirical exercises associated with the redistribution objective of intergovernment fiscal mechanisms are intended to demonstrate one of the major fiscal and economic effects of alternative allotment formulae which differ with respect to measures of fiscal capacity and to mathematical function per unit of need. The features of the schemes which will be examined most closely will be their degree of redistribution and the total extent of redistribution. The degree of redistribution may be defined as the rate at which the recipient government's allotment ratio (A) decreases as its fiscal capacity ratio (C) increases or the first derivative of the function. For the linear expression in the above example $A = (1 - KC)$ the degree of equalization is the constant (i.e. $- K$).

There are two ways the degree of equalization can be examined: with a fixed distribution of fiscal capacities at a given point in time; or in terms of the differential impact of equalization on rich and poor recipients over time. In terms of the above symbols, the cross-sectional analysis involves calculating and examining the values of A for each individual value of C in a fixed distribution. For each value of C, there will be several values of A, one for each of the normative allotment functions and one corresponding to each federal spending or transfer program. It is proposed to analyze the alternative series of values of A statistically and graphically to see how they vary between more able recipients (C>1) and less able recipients (C<1) at a given time.

The second approach to examining the degree of equalization, (i.e. the analysis of the rate at which A changes as C changes over time) will involve assessing the differential impact of changes in relative fiscal capacity (C) over time, on changes in allotment ratios (A) for rich recipients and poor recipients. Of course, for linear functions it will be a constant but for non-linear expressions, in most cases, it will differ for rich and poor jurisdictions.

Extent of redistribution may be defined as the percentage of a total grant which represents a reallocation of funds from rich to poor jurisdictions. This measure can be calculated by comparing provincial shares based on the actual values of C, for a given year without equalization, with provincial shares based on values of C using alternative allotment functions. The net increase in shares received by less able jurisdictions or the net loss in shares received by the more able provinces is the total extent or amount of fiscal redistribution accomplished.

TOWARD GREATER ALLOCATIVE EFFICIENCY

The empirical work of this dissertation is chiefly concerned with the redistributive impact of federal-provincial fiscal transfers on the financing of education in the provinces of Canada. A secondary objective is to evaluate the measures which were taken between 1960 and 1970 to promote better fiscal balance between aggregate spending responsibilities and revenue sources between the federal and the provincial levels of government, and the way in which these measures affected the financing of education. In short, the empirical work evaluates the success of these federal-provincial fiscal arrangements in promoting more adequate fiscal balance and greater distributional equity in education.

However, there is a third objective of intergovernmental transfers--to promote greater allocative efficiency. Empirical assessment of this objective is beyond the scope of this study, but we cannot simply ignore it entirely. We shall limit ourselves, therefore, to the following brief statement: at this time these effects appear to be quantitatively inconclusive or obscure. Williams has shown that since spillovers have both income and substitution effects, their net effects in the public sector are indeterminate.[62] Break, referring in 1967 to the difficulties involved in determining the allocational effects of fiscal transfers, stated "No one, so far as I know, has yet developed a reliable method for predicting how legislators and administrators, when presented with a certain sum of money, would allocate the proceeds among different government programs."[63] In the absence of a forecasting model, the best one can do is examine past changes in the structure of spending and infer from these data, the way in which funds from various sources might be spent for education if the trend continued or if certain assumed shifts in spending took place.

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[62] Alan Williams, "The Optimal Provision of Public Goods in a System of Local Government", Journal of Political Economy, LXXIV (February, 1966), pp. 18-33.

[63] George F. Break, Intergovernmental Fiscal Relations in the United States (Washington: Brookings Institution, 1967), p. 137.

A limited amount of this type of analysis is included in subsequent chapters.

In Chapter II we discussed in general terms the argument that fiscal transfers may cause or perpetuate a misallocation of resources. Since this argument is so prominently advanced against both conditional grants for specific purposes and against unconditional revenue equalization grants, it is appropriate that the allocational effects of grants be discussed in more detail, even though they may not be capable of reliable measurement.

Categorical or functional grants are justified only where there are external benefits which result of suboptimal levels of financial support or standards of service in lower level governments. Jesse Burkhead has summarized the conditions under which such grants will promote more efficient allocation of resources: ". . . a grant-in-aid (i.e. specific-purpose, conditional grant) from the national to the regional government will contribute to an efficient allocation of resources only if the grant is to finance national benefits derived from the program which extend to the nation and only if there are no important side effects on other programs and other revenues. In principle, such grants-in-aid should be extended to the point where the last dollar of expenditure brings an equivalent national marginal social benefit. It is necessary to finance the state benefitted portion of the program from state resources, and the national benefitted portion of the program from national resources."

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[64] Jesse Burkhead and Jerry Miner, Public Expenditure (Chicago: Aldine Publishing Company, 1971), p. 279.

All grants have economic effects on their recipients. As with the properties and characteristics of grants themselves, their effects may be classified in a variety of ways. The most obvious effect of a fiscal transfer is that it increases the income of the recipient--the so-called income effect. This is the primary effect of derivation transfers aimed at improving fiscal balance. If the grant is specific rather than general in purpose, the income effect, in fact becomes a so-called price effect, in that it lowers the relative price of the commodity or service for which it is paid. Assuming that there is a positive elasticity of demand for public goods, an unconditional grant will have a total expenditure effect but a specific grant will have a service or commodity expenditure effect.

On receipt of a fiscal transfer there are three responses a recipient might make with regard to its structure or pattern of spending: neutral; substitutive; or stimulative. A neutral response to a general grant is made if each dollar of funds received is distributed among different government programs in the same proportion as revenue from the recipients' own tax sources. A neutral response to a specific grant is made if the increase in spending for the purpose in question is equivalent to the amount of the grant. A substitution response refers to the extent by which the grant recipient responds by reducing expenditure from its own resources and effecting a corresponding reduction in taxes or reducing expenditure in the grant area and increasing spending for some other service. If the service for which a specific grant is made is well established, the grant, in effect becomes a gift to the recipient, enabling it to free funds for other purposes. The extent to which substitution will occur is mainly a function of the fiscal capacity of the recipient and, to a lesser extent, of its attitudes and policy priorities. A stimulation response requires the recipient government to be induced by the grant to raise additional funds from its taxpayers so that it can increase spending by more than the grant.

A variety of similar descriptive categories and graphic techniques have been devised for analyzing the effects of various kinds of fiscal transfers on recipients and donors, but none offers a reliable, operational means of quantitatively predicting the reactions of governments when allocating different sums of money among different programs.[65]

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[65] See, for example, J.S. Osman "The Dual Impact of Federal Aid On State and Local Government Expenditures", National Tax Journal XIX (December, 1966), pp. 360-372. Osman attempts to determine the extent to which federal aid in the United States has been a substitute for state and local funds and the extent to which it has been a stimulant to greater state and local expenditure. His major conclusion is that federal aid has been a stimulant to greater state and local spending from own sources of revenue. However, as pointed out by Bird op.cit. p. 211, among others, Osman may have ". . .merely captured the results of the matching formulae by which aid is allocated."

CHAPTER V

MEASURES TAKEN TO ACHIEVE FISCAL BALANCE FOR EDUCATION IN CANADA

Chapter II identified the basic allocative and distributive problems inherent in the federal form of government organization. One of the allocative problems identified and discussed is that of allocating spending responsibilities and revenue sources between the federal and provincial governments so that a balance is maintained between the financial resources and spending needs over time. Alternative means for overcoming this problem and achieving aggregate fiscal balance were discussed in Chapter IV. In this chapter we make an empirical assessment of the measures taken in Canada to meet the rapidly changing pattern of demands for public services, particularly in education.

To estimate empirically the adequacy of the revenue sources to carry out provincial and local responsibilities for educational service presents some difficulty. First, the situation is dynamic in that the pattern of public demand for various services and public service priorities are constantly changing. Therefore, the appropriate division of revenue-raising powers also changes. One could make the assumption that the trend in expenditures of the two major levels of government accurately reflects the public's scale of priorities. Then it would be possible to determine the consequences of past trends

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in terms of the changing revenue sources. An appropriate evaluation of the relative success of federal-provincial and, to some extent provincial-local, fiscal arrangements would be to examine the long-term trends in governments' balance of expenditures and revenue sources.

Given the apparent reluctance in Canada to transfer service responsibilities from the provincial to the federal government, assessment of the fiscal balance objective is reduced to the following questions: What is the evidence of shift in priorities? How successful were federal-provincial fiscal arrangements in effecting the required shift in financial resources? What was the effect of these fiscal arrangements on the financing of education?

We shall begin by examining the growth of expenditure by level of government, by function and by economic character over the years. Then we shall examine the shifts in revenue sources which permitted a changed pattern of spending to take place.

Throughout this chapter attention will be focussed on the aggregate expenditures and revenues of all Canadian provincial and local governments. Differential treatment of provinces, based on differences in fiscal capacity and/or fiscal need, is considered in Chapter VI in connection with the redistribution objective.

TRENDS IN GOVERNMENT SPENDING

Total Spending by Function

In Table 1, expenditures are shown for the two senior levels of government for selected years on a national accounts basis.[66] The most obvious trend in government expenditures has been their increase in absolute terms and in relation to gross national product. For example, between 1950 and 1970 government spending rose more than sevenfold in absolute terms and from 21.7 to 33.8 per cent of G.N.P.

This dramatic increase in government spending is somewhat misleading in that it includes transfer payments, mainly to individuals. In terms of the goods and services actually consumed or used up in government operations, the increase was more modest, from 13.0 per cent of G.N.P. in 1950 to 19.9 per cent in 1967. Growth becomes even less if military expenditure and government expenditure on capital account are deducted. On the basis of unrevised national accounts data, total government current civilian expenditures on goods and services rose only from 6.4 per cent of G.N.P. in 1950 to 11.2 per cent in 1965.[67]

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[66] Three major sources of financial data are used in this study: The National Accounts (revised) for illustrating comprehensive trends in government expenditure and revenue; the Public Accounts for analysis of totals by function or by revenue source; and the Education Division data for detailed analysis of educational expenditure and revenue sources. For technical reasons it is impossible in some instances to reconcile figures from these three sources. This fact does not pose a problem in the present study. Where data from more than one of the three sources are combined, it is relative differences or changes which are important.

[67] Richard M. Bird, The Growth in Government Spending in Canada Canadian Tax Papers, No. 51 (Toronto: Canadian Tax Foundation, July 1970) pp. 260-61.

The most dramatic increases in government spending in the last two decades have not been for goods and services actually consumed in government operations, so-called "exhaustive" spending, but for "non-exhaustive" spending in the form of transfers and subsidies to individuals and corporations. For example, it has been estimated that 84.3 per cent of the growth in total government spending in Canada between 1954 and 1965 was for non-exhaustive spending programs.[68] This represents a very sharp increase in government income redistribution activities in the postwar period, especially considering that non-exhaustive spending accounted for only 29.0 per cent of the growth in government spending over the much longer period of 1933 to 1965. One reason for the smaller relative importance of non-exhaustive spending in the longer period is the very large defence component of the forties, most of which is exhaustive.

It is apparent from Table 1 that, since 1945 provincial and local government spending has grown much more rapidly than federal spending. Due mainly to the war effort in 1945, the federal government made 84 per cent of final government expenditures in Canada. By 1961, the federal and provincial-local governments were each making 50 per cent of final government expenditures. Since 1962, provincial and local final spending has exceeded federal final spending. By 1970, provincial and local governments were making 60 per cent of final expenditures and their share of the total has continued to grow. Between the end of the federal defence build-up in connection with the Korean War in 1952 and 1970, the average annual rates of growth of federal and provincial-local expenditures have been 6.2 and 11.9 per cent, respectively.

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[68] Ibid., p. 277

Education Among Competing Functions

The reasons for greater provincial-municipal revenue needs become apparent on examination of the growth in spending of the different levels of government, by function. First we must distinguish between defence and non-defence functions. Spending for national defence is in a class by itself in the sense that, particularly in wartime, it takes priority over everything else and, therefore, is not truly competitive with non-defence expenditures. Defence spending seldom reduces the dollar expenditure for non-defence services; but it may reduce the proportion of total spending devoted to other purposes.

Except for the brief interval of the Korean War, there has been a steady downward trend in the proportion of total government expenditures in Canada allocated to defence since the Second World War. All defence spending is made by the federal government. Between 1955 and 1969, it declined from 43.8 to 13.9 per cent of total federal expenditure (See Tables 2 and 3). Over the same years it declined from 26.5 to 6.5 per cent of total expenditure for all three levels of government.

As for non-defence functions, the only one which did not increase its share of total government spending over these years was transportation and communication, which declined from 12.0 to 8.8 per cent. Education has increased its share of total government spending more than any other function of government.[69] In 1969 its share of all government spending (19.9 per cent) represented an increase of 8.9 points over its 1955 share (11.0 per cent). Although the major change in shares of expenditures by function occurred at the federal level (i.e. between defence and non-defence spending), between 1955 and 1969 direct federal spending for education gained only 4.3 points. However, this relatively small increase represented an eight-fold increase in the proportion of federal expenditures going to education (from 0.6 to 4.9). Of course, the major increase in expenditure on education was incurred by provincial-local governments whose educational spending increased by 6.2 points, from 27.1 in 1955 to 33.3 per cent in 1969.

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[69] As used in Tables 2 and 3, "Education" refers to spending for all levels of formal educatic

An alternative method for analyzing changes in total government spending by function is illustrated in Table 4. The technique used has been to determine changes in the ratios of spending by function in relation to Gross National Expenditure (G.N.E.) and then to express these changes as percentages of the corresponding change in the ratio of total government spending to G.N.E.[70] Changes in the functional growth of public expenditure have been shown for two intervals, 1933

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[70] The technique used by Bird, Op.cit. p. 277, is as follows: The share of the growth of total government expenditure accounted for by each expenditure function is

$$\frac{\left(\dfrac{G_1^*}{Y_1} - \dfrac{G_o^*}{Y_o}\right)}{\left(\dfrac{G_1}{Y_1} - \dfrac{G_o}{Y_o}\right)} = \frac{B_1x_1 - B_ox_o}{B_1 - B_o}$$

where Y = GNE G = total government expenditure
G^* = expenditure on a particular function
x = proportion of GNE accounted for by G^*
and B = proportion of G accounted for by G^*
Subscripts o and 1 refer to time

to 1965 and 1954 to 1965. Between 1954 and 1965 education accounted for 51 per cent of the increase in total expenditure, health for 34 per cent and social welfare for 19 per cent. The fact that these three services alone appear to represent more than 100 per cent of the increase is explained by the sharp offsetting declines in defence and mutual aid and veterans' pensions and benefits, totalling 67 per cent. Over the period, 1933 to 1965, the relative importance of education, health and social welfare was less than in the more recent interval, mainly because of the greater relative importance of defence spending.

We have related government expenditure to gross national product and analyzed its composition by level of government, economic character and function. Total spending for education will now be analyzed by level and an attempt will be made to identify some of the major factors which have contributed to the growth in educational spending.

Changing Patterns of Spending for Education

Table 5 shows total spending for all levels of formal education in Canada for selected years since 1954-55, as published by the Education Division of Statistics Canada.[71] The most striking feature of total expenditures for education in Canada has been their growth from $713.3 million in 1954-55 to a projected $9,357.8 million in 1973-74. This represents a twelve-fold increase for the period, corresponding to an average annual growth rate of 14.6 per cent.

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[71] Data for all years from 1968-69 on are either preliminary, estimates, or for 1972-73 and 1973-74, projections made by the Education Division.

In addition to this remarkable increase, there has been a marked change in the allocation of total spending among levels of education: the share of post-secordary education has increased, that of elementary and secondary education decreased. Between 1955-56 and 1970-71 the proportion of total educational spending allocated to post-secondary education and vocational training rose from 16.9 to 34.9 (estimated) per cent of the total; that allocated to elementary and secondary education fell from 80.6 to 63.2 (estimated) per cent.

The shift in shares of total expenditure is also illustrated by differential growth rates in spending by level of education. While expenditure at all levels has increased rapidly since 1954-55, that for public, elementary and secondary education increased more slowly than total spending, an annual average of 13.0 compared to 14.6 per cent.[72] Over the same period, spending on university and on vocational training is expected to increase by an average annual rate of 18.2 and 22.7 per cent, respectively.

In 1970-71 elementary and secondary enrolments in Canada peaked at 5.8 million; and it is probable that they will decrease gradually throughout the seventies and into the early eighties. Based on the downward trend in live births six years earlier, the Education Division of Statistics Canada has predicted that between 1971-72 and 1974-75 grade one enrolment will decline by almost 20 per cent and enrolment in Grades K to 8 by approximately 7 per cent. As this new "trough" works its way through the system, the rate of increase in secondary enrolment will also begin to decline. Prediction of post-secondary enrolments is, of course, more difficult because purely demographic factors are less important than at the elementary and secondary levels. However, based on the flow through the elementary and secondary schools and on demographic factors, assuming other influences to be constant, post-secondary enrolments might have been expected to decline in Canada as a whole by the early to mid-eighties. But it is interesting to note that the rate of growth in university enrolments began to fall in several provinces in 1970 and 1971 and it was affecting the upper grades of the secondary school in 1971 and 1972. There are several reasons for this situation. Softness in the labour market for educated manpower and an apparent "backlash" among youth against higher education which no longer seems to provide the key to socio-economic success, are the most common ones advanced.

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[72] Average annual rate between 1954-55 and 1973-74 (projected).

Because of a contracting system and as a result of explicit policy decisions to curb spending, total expenditure for education will likely grow more slowly in the seventies than it did in the latter half of the fifties and the sixties. This trend is already apparent (See Table 5): between 1964-65 and 1969-70 spending for elementary and secondary education increased at an average annual rate of 16.1 per cent; for 1969-70 to 1973-74 the projected annual average is 8.3 per cent. The year to year rates in the latter period reduce constantly; they are 12.4, 8.0, 7.2 and 5.6 per cent, respectively. Spending for university education is also expected to fall off sharply, declining from an average annual rate of 21.9 between 1964-65 and 1969-70 to one of 10.4 between 1969-70 and 1973-74. This decline in educational spending in Canada may be tempered in the future by (1) attempts to reduce pupil-teacher ratios, (2) by upgrading of the teacher force which will increase the payroll costs of education systems, (3) by the introduction of new programs and improvements in existing programs and (4) at the upper secondary and post-secondary levels, by improved employment conditions for educated manpower which have the effect of inducing higher demands for participation in programs.

Factors Influencing the Growth of Spending for Education

Elementary and secondary operating expenditures are pushed upwards by increases in enrolment and increases in per pupil costs. These, of course, are not independent of each other. A very large proportion of increased costs is represented by the additional teachers made necessary by the extra pupils. The shortage of teachers, which makes necessary massive teacher training costs not only creates the direct expenditure in teacher training institutions but, because of competition in the shortage period, drives up teacher salaries at a higher rate than was previously the case.

Enrolment increases are caused by increases in the school age population and by increased retention rates. Increases in per pupil costs can be broken down in different ways. The Economic Council of Canada allocates them between expenditures on teachers and expenditures on all other items and further differentiates the effect of teacher-related spending between the effects of increased median salaries and the decrease in pupil-teacher ratios.[73]

The Council calculated the effects of the above factors on increases in spending for elementary and secondary education in each province for two periods, 1956 to 1966 and 1961 to 1966 and these are reproduced in Table 6.[74] For Canada as a whole, in the period 1956 to 1966 increased enrolment accounted for 31 per cent of the increased spending, per pupil expenditures the remaining 69 per cent. Population growth was mainly responsible for the increase in spending associated with enrolment, (accounting for 24.4 per cent of total spending increases); increased teacher costs was the major element associated with increases in pupil costs (accounting for 43.6 per cent of total spending increases). Although the totals for Canada were not available, it is apparent from an examination of the data by province that increased median teacher salaries rather than falling pupil teacher ratios accounts for most of the increase in the cost of teacher services. The marked improvement in teacher qualifications and in teacher salary scales have been responsible for the increased median salaries.

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[73] See J. Cousin, J.P. Fortin and C.J. Wenaas, Some Economic Aspects of Provincial Educational Systems, Staff Study No. 27 (Ottawa: Information Canada, 1971), pp. 114-15.

In the period 1961-66 growth in enrolment accounted for 29 per cent of the increase in total expenditure; obviously the importance of this factor will continue to decline for some years. Increased expenditures on teachers remains the largest single element in increased educational spending, accounting for 40 per cent of the increase in the 1961-66 period. However, spending on other items has increased relatively fast accounting for 31.2 per cent of increased educational spending in 1961-66 compared with 25.8 per cent in the period 1956-66.

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[74] The Council adopted a method employed by Selby-Smith and Skolnik. This technique involves isolating the effect of each factor by holding it constant while the other factors change. Since the total change accounted for in this manner will exceed the actual change these shares are applied to the actual change and the amounts so obtained converted to percentages. See C. Selby-Smith and M. Skolnik, Concerning the Growth of Provincial Expenditures in Ontario, 1938-1966, Ontario Institute for Studies in Education, Occasional Paper No. 3, Toronto, 1970.

Finally, it is important to note the much greater contribution to increased expenditures on teachers in the 1961-66 period of falling pupil teacher ratios as opposed to increased median salaries. Increased median salaries contributed less to the growth of spending for elementary and secondary education in 1961-66 than in 1956-66 in all nine provinces (excluding Quebec) while falling pupil teacher ratios contributed more. The simple average of decreased contributions of median salaries to the growth of spending between the two intervals was 7.7 points compared with simple average increase in contributions of falling pupil teacher ratios of 5.0 points.

TRENDS IN GOVERNMENT REVENUE

We have demonstrated the growth of government spending in the 1950's and 60's, its changing composition by level of government, and by function; and we have examined some of the evidence for the growth in spending on elementary and secondary education. In order to evaluate the success of intergovernmental fiscal arrangements in facilitating a shift in resources from the federal to provincial-local governments, we must also analyze trends in government revenue.

Total Revenue by Source

Governments have four basic methods of obtaining increased revenues: first, they may rely on automatic growth in yields from existing tax structures as the economy expands and incomes grow. The extent to which a government may rely on this source depends on the income elasticity of tax yields on given tax structures over time.

Secondly, they may increase tax rates, introduce new taxes or broaden tax bases.[75] Because of its heavy reliance on more elastic income taxes, the federal government has had to make less use of new or increased taxes than provincial or local governments. Despite the greater access to the income tax field and a steady increase in federal transfers during the sixties, to be documented below, the provinces have been forced to make many changes in retail sales, tobacco and gasoline taxes, liquor prices, automobile licences and hospital insurance premiums as well as income taxes. The municipalities, despite a rapid increase in provincial functional grants, have increased property tax rates.

Thirdly, they may derive additional revenue by fiscal transfers from another level of government. This source can only be tapped by one of the two sovereign levels of government. In Canada, virtually all intergovernmental transfers and tax abatements have been made by the federal government to the provincial governments. While the provinces have also made extensive use of conditional grants to their municipalities and school boards, they have made virtually no use of unconditional transfers or tax abatements to their local governments.

The federal government has used three methods to transfer funds to the provinces: reduction of federally collected income taxes to provide additional tax room for the provinces, unconditional grants, and conditional grants.

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[75] A description of federal and provincial tax changes made each year can be found in: Statistics Canada, Principal Taxes and Rates (Ottawa: Information Canada).

Table 7 provides a comprehensive picture of the growth of government revenue by source using revenue elasticities which attempt to show which revenues have grown more and which have grown less than proportionately to some measure of national output. For example, for the period 1933 to 1965 an elasticity of total income tax revenue with respect to gross national expenditure of 1.66 means that for every 1 per cent rise in gross national expenditure, the total government income tax revenue rose by an average of 1.66 per cent per year. It should be noted that, in addition to automatic tax yields, these revenue elasticities reflect changes in tax rates and tax bases.

Over the entire 1933-1965 interval, differences in elasticities of revenues from income, consumption and wealth taxes with respect to G.N.E. adhere closely to the expected pattern of yields noted earlier. The yields of income taxes were clearly progressive, those of consumption taxes were either proportional or slightly progressive and those of wealth taxes were regressive with total elasticities of 1.66, 1.12 and 0.87, respectively. Over the period 1953-1965 this pattern changed mainly because of the introduction of new consumption taxes and because of higher rates and altered bases of wealth taxes. Income tax bases and rate structures were relatively stable. In fact, faced with reduced demand for expenditures, the federal government found it possible in the early part of this period to actually lower income taxes by granting more generous exemptions and lower rates. The higher revenue elasticities of provincial income taxes is explained largely by the fact that, from 1941 to 1961 the public finance statistics show provincial revenue from rental of income tax as government transfers rather than as income tax revenue, whereas after 1962, the provinces began levying their own income taxes again. The higher elasticities for other provincial tax sources and municipal wealth taxes are due mainly to new taxes or increased tax rates on existing taxes.

It will be useful now to examine the allocation of revenues by source for a recent year, 1969 (See Table 8). Tax revenue made up 83 per cent and non-tax revenue 17 per cent of total government revenues. Non-tax revenue consists of: income from privileges, licences and permits; sales and services; contributions from enterprises; and "other" revenue. Just over half of all tax revenue, 42 per cent of the total, came from individual and corporate income taxes; 19 per cent came from sales taxes and 12 per cent from real property and business taxes. Most of the remaining tax revenue consisted of excise taxes and duties and customs import duties levied federally.

In 1969, provincial-local governments relied almost equally on income, sales, and real property taxes which made up 23.5, 22.5 and 25.0 per cent of their total revenues. The federal government, however, derives 60 per cent of its revenue from income taxes, 16 per cent from sales taxes and none from real property taxes. As a source of income, tax revenue is relatively more important to the federal than to the provincial-local governments accounting for 88 per cent of its total revenue compared to 77 per cent for the provincial-local governments.

To complete the general analysis of the manner in which revenue sources have changed to accommodate provincial-local needs let us examine the historical changes in federal and provincial-local shares of total revenue (See Table 9) and the growing importance of federal transfers to provincial and local governments (See Table 10).

Federal revenue, as a share of all government revenues, was at its highest level, 78 per cent, in 1944. It has declined gradually since, reaching 52 per cent of the total in 1970. The reasons for the corresponding increase in provincial and local governments' share of total revenue from own sources were discussed above in connection with the data shown in Table 7. The rise in the provincial-local share since 1962 reflects, to a large extent, provincial income taxes levied to take up the slack caused by federal abatements or withdrawals from this field. Unconditional and conditional grants from the federal to the provincial-local level are not reflected in these shares.[76]

Federal Withdrawals from the Income Tax Field

Abatements of taxing power by the federal government in favour of the provinces have been an important feature of federal-provincial fiscal arrangements since 1962. These abatements made it possible for the provinces to increase their income tax revenue at virtually no cost to themselves, either political or administrative. In terms of the percentages of total income tax yield in each province, and the percentages of the taxable incomes of corporations, the standard abatements grew as follows:

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[76] The relative importance of unconditional and conditional transfers and their composition are discussed later in this chapter.

1962 Arrangements	Percentage points of federally collected income taxes abated to the provinces	Percentage points of corporate income abated to the provinces
1962	16	9
1963	17	9
1964	18	9
1965	22	9
1966	24	9
1967 Arrangements		
1967 to 1971	28	10

From 1967 on four additional percentage points of personal income tax, and one percentage point of the taxable income of corporations were granted to the provinces as a partial substitute for the former per capita grants for universities. This measure was designed to provide the provinces with the revenue to meet the expected explosion in demand for post-secondary education. The yield of the extra tax points, together with a cash adjustment payment are equal to approximately 50 per cent of post-secondary operating expenses in the provinces. Because their post-secondary expenditures were low, Newfoundland, Prince Edward Island and New Brunswick accepted an option of $15 per capita of their 1967 population escalated annually by the national rate of post-secondary education expenditures.[77]

These increases represent a shift in effective taxing power from the federal to the provincial governments. They constitute an implicit recognition of provincial-local needs in the fields of education, health and social welfare and represent the major effort to establish a new balance between spending needs and revenue means at each level of government in Canada.

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[77] The cash transfer was scheduled to expire March 31, 1972 but was extended for two years. However, total assistance cannot increase by more than 15 per cent per year.

In 1972, the federal government introduced a subtle but important change into its fiscal agreement with the provinces, implying that the tax room granted to the provinces between 1962 and 1971 had, in fact, established a new balance of revenue means and spending responsibilities between the senior levels of government, and that from now on, the federal government would regard each level of government as having an equal need for additional funds. In accordance with the concept of "fiscal responsibility", that is to say, each level of government should rely on its own electorate to determine the appropriate level of taxation, the tax abatement system with respect to personal income tax was abandoned in 1972. It will continue for the corporation income tax.

Abandonment of the abatement system means that, instead of calculating their provincial personal income taxes as a percentage of a basic income tax shared by both levels of government, persons will now calculate them as percentages of federal tax payable. Because of this change in the tax base it was necessary for the provinces to increase their rates by a conversion factor of 30.5/28 to obtain the same revenues under the 1972 to 1977 agreement as under the former agreement. The essential point is that the federal government has called a halt to the tax abatement procedure, stating that the provinces must, in future, enact their own income taxes and not rely on federal withdrawals.

Federal Transfer Payments

In addition to the reduction of federal taxes in order to provide greater tax room for the provinces, the federal government has also transferred fiscal resources to the provinces and municipalities by means of unconditional and conditional grants. Tables 11 and 12 provide breakdowns of federal grants to provinces and municipalities for selected years from 1950 to 1970.

Prior to examining these tables, it will be useful to examine the tremendous growth in all intergovernmental transfer payments in Canada, in absolute terms and in relation to Gross National Expenditure and in relation to total government spending as shown in Table 10. Total intergovernmental transfer payments nearly doubled between 1950 and 1955, growing from $433 million to $799. They have more than doubled in each subsequent five-year interval, reaching $8,805 million in 1970. In relation to Gross National Expenditure, total intergovernmental transfers grew from 2.34 per cent in 1950 to 4.49 per cent in 1960 and reached 7.60 per cent in 1970. Intergovernmental transfer payments also grew rapidly in relation to total government spending, but not as rapidly as in relation to G.N.E. Intergovernmental transfers grew from 10.78 per cent of government spending in 1950 to 24.11 per cent in 1970. Most of this relative increase occurred between 1955 and 1965 (i.e., from 10.87 to 22.19 per cent).

Most intergovernmental transfer payments in Canada have been from the federal government to the provinces and from the provinces to their respective local governments. Relatively minor amounts have been transferred from the federal government directly to local governments and from local governments to their provincial governments. In 1970

37.5 per cent of all intergovernmental transfers were from the federal government to the provinces and 60.7 per cent were from the provinces to their local governments. The remaining 1.8 per cent was from the federal government to local governments and from local governments to the provinces.

The most notable trend in the composition of total intergovernmental transfer payments has been the growth in relative importance of transfers from the provinces to their local governments which increased from $171 million in 1950 to $5,349 million in 1970 or from 39.5 per cent to 60.7 per cent of total transfer payments among governments. In relation to Gross National Expenditure the increase in provincial grants was from 0.92 to 3.57 per cent and in relation to total government spending from 4.26 to 14.65 per cent over the period 1950 to 1970. This trend was matched by a decline in relative importance of transfers from the federal to provincial governments as shares to total transfers among governments. Nevertheless, transfer payments from the federal government to the provinces increased from $250 million to $3,303 million between 1950 and 1970, from 1.35 to 3.87 per cent of G.N.E. and from 6.23 to 9.05 per cent of all government spending.

Having obtained an overview of the growth in relative importance of intergovernmental transfer payments, it will be useful to examine more closely the composition of federal transfer payments to provinces and municipalities in Table 11. The totals in Column 9 do not correspond exactly to the federal transfers shown in Table 10 because the data in Table 10 were obtained from national accounts sources while those in Tables 11 and 12 were derived from public accounts sources.

Total federal transfers to provincial and local governments increased from $275 million in 1950 to $3,095 million in 1970. The relative importance of conditional, as opposed to unconditional transfers to the provinces varied considerably over this period. Between 1950 and 1955 conditional transfers declined sharply in importance, from 54 to 20 per cent of total federal transfers. Between 1955 and 1965, however, their share increased to 43 per cent in 1960 and to 69 per cent in 1965, mainly because of the introduction of the federal government's shared-cost programs to provide basic health and welfare services of an acceptable national standard in all provinces. Between 1965 and 1970 conditional transfers declined from 69 to 61 per cent of total federal transfers

Table 12, which provides a breakdown of federal conditional grants by function, reveals that in 1970 the largest share of functional assistance, 59 per cent, went to health programs and the second largest share went to social welfare programs, 24 per cent. Education received only 7.0 per cent, which represents a decrease from the 1965 level of 15 per cent. This is mainly because the grants under the Technical and Vocational Training Assistance Act were phased out between 1965 and 1970. Most federal conditional grants to municipalities were for transportation or sanitation and waste removal.

Between 1955 and 1970 combined unconditional and conditional transfers from provincial governments to their local governments more than doubled every five years as shown in Table 13. In marked contrast with the federal fiscal transfers, approximately 90 per cent of provincial grants to municipalities are conditional. The largest proportion of provincial grants are, of course, for education and its share increased from 64 per cent in 1952 to 75 per cent (estimated) of total provincial transfers in 1970. Provincial conditional grants for other functions, notably transportation, declined over this period.

Sources of Funds for Education

Table 14 which shows the changing sources of funds for education by level of government from 1954-55 to 1973-74 is the counterpart of Table 5 which gave the expenditures by level of education over the same period. The most notable trends in sources of funds for education have been the increase in relative importance of revenue from provincial and territorial sources and the (matching) decline in importance of revenue from local government taxation.

The provincial share of total funds for education increased from 41.3 per cent in 1955-56 to 57.0 per cent in 1970-71 and is expected to increase to 59.2 per cent in 1973-74 as shown in Table 14. Over the same interval, the share made up of local taxation decreased from 42.5 to 23.8 per cent and is expected to be 22.7 per cent in 1973-74. Federal funds for direct spending on education increased only modestly over these years. Such increase as was experienced was due mainly to financing under the Technical and Vocational Training Assistance Act between 1961 and 1970. It is expected that the federal share will decrease slightly to 9.4 per cent in 1973-74 from a high of 10.8 per cent in 1970-71.

Provincial funds for education increased at an average rate of 17.3 per cent per year (estimated) between 1954-55 and 1973-74. The most rapid expansion, 22.4 per cent per year, occurred between 1964 and 1969 during the period when federal tax abatements in favour of the provinces were highest. This was also the period of most rapid growth in local taxation for education, 13.9 per cent per year.

It is expected that funds for education will be found to have increased much more slowly between 1969-70 and 1973-74 than during any other interval in recent years. The estimated rates for this period are 11.7 per cent per year for funds from provincial sources, 8.6 per cent per year for funds from private sources, 6.0 per cent per year for funds from local sources and 4.6 per cent per year for federal funds.

To summarize the findings discussed in this chapter, the analysis of expenditure trends revealed that provincial-local spending has increased at a much higher rate than federal spending since the early fifties. The major reason for this trend was a rapid expansion of spending for health, education and welfare services, which come within the provincial domain, offset by a rapid decrease in federal defence spending.

Mainly as a result of the explosion in demand for post-secondary education, the elementary and secondary share of total educational spending has dropped sharply despite its average annual growth rate of 13.0 per cent. Between 1956 and 1966, just under one-third of the growth in spending for elementary and secondary education was due to increased enrolment and just over two-thirds was attributed to increased expenditure per pupil. Between 1961 and 1966, the influence of increased enrolment on the growth of elementary and secondary spending declined and this trend will undoubtedly continue.

Because of our rigid constitution and a reluctance to shift spending responsibilities to the federal government, the general situation described above called for a shift of financial resources to the provincial and local governments. The need for such a shift was increased by the relative inelasticity of sales and property taxes which were the chief sources of provincial and local revenue from own sources until the early sixties.

The imbalance between spending needs and revenue sources at the provincial-local level was met primarily by heavy reliance on conditional grants until the mid-sixties. Federal shared-cost programs provided funds for certain health and welfare programs on condition that the provinces obtained their own share from their own funds. Extensive use of such programs eventually led to strong provincial opposition and the federal government has, since 1965, made greater use of unconditional transfers.

Beginning in 1958, the federal government initiated a more satisfactory method of facilitating revenue shifts to the provinces, namely, federal abatements or withdrawals from the income tax field which have been taken up by the provinces. In 1962, tax sharing became a major feature of federal-provincial fiscal arrangements and continued until 1971. From 1972 on, the federal government has assumed that each of the two senior levels of government have equal needs for additional funds and must levy additional taxes to meet those needs.

In concluding this chapter it will be useful to discuss briefly the links between expenditure levels and revenue structures. It is clear from the analysis of revenue trends that some revenue sources, such as income taxes, grow faster than national income and that others, such as property taxes, grow more slowly. The faster taxes grow relative to incomes, the easier it is, politically, to increase spending. The more slowly they grow, the more difficult it is, politically, to increase spending since tax rates must be increased. Thus, the more income elastic taxes are with respect to changes in national income, the more governments can rely on automatic growth in revenues to increase spending and the less they will be forced to confront their electors with tax rate changes, which may entail political costs.

Bird indicates that, although taxes and expenditures are linked in the minds of the electorates, the "revenue constraint" in an advanced country with adaptive administrative machinery, such as Canada, is not regarded as a serious long-run barrier to expanding government expenditures.[78] He points out, however, that this conclusion may not apply to less developed countries nor to municipal governments, even in developed countries. If some tax limit or breaking point is perceived to exist, beyond which a revenue constraint operates to check the growth of public spending, politicians may be able to turn to benefit taxation to finance certain public services where the private benefit is substantial and can be roughly measured (e.g. higher education and certain kinds of health service).

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[78] Bird, op.cit., p. 121.

TABLE 1

ALLOCATION OF FINAL EXPENDITURES (AFTER INTER-GOVERNMENTAL TRANSFERS) BY LEVEL OF GOVERNMENT
ON A NATIONAL ACCOUNTS BASIS, 1942-1970
($MILLIONS)

Year	Final Expenditures Federal	Final Expenditures Provincial-Local	Shares of Final Expenditures Federal	Shares of Final Expenditures Provincial-Local	Total Expenditures	As Per Cent of G.N.P. (At Market Prices)
	(1)	(2)	(3)	(4)	(5)	(6)
TAX RENTAL ERA						
	$	$	%	%	$	%
1942	3573	655	84.5	15.5	4228	41.1
1943	4192	679	86.1	13.9	4871	44.1
1944	5119	735	87.4	12.6	5854	49.4
1945	4135	807	83.7	16.3	4942	41.7
1946	2804	961	74.5	25.5	3765	31.7
1947	1925	1198	61.6	38.4	3123	23.2
1948	1784	1455	55.1	44.9	3239	20.9
1949	1947	1663	53.9	46.1	3610	19.3
1950	2085	1818	53.4	46.6	3903	21.7
1951	2889	2110	57.8	42.2	4999	23.7
1952	3985	2287	63.5	36.5	6272	26.1
1953	4198	2361	64.0	36.0	6559	25.9
1954	4155	2651	61.0	39.0	6806	27.0
1955	4273	2904	59.5	40.5	7177	25.7
1956	4533	3332	57.6	42.4	7865	25.1
1957	4829	3713	56.5	43.5	8542	26.0
1958	5386	4127	56.6	43.4	9513	27.9

TABLE 1 (continued)

Year	Final Expenditures Federal	 Provincial-Local	Shares of Final Expenditures Federal	 Provincial-Local	Total Expenditures	As Per Cent of G.N.P. (At Market Prices)
	(1)	(2)	(3)	(4)	(5)	(6)
TAX RENTAL ERA (continued)						
	$	$	%	%	$	%
1959	5432	4719	53.5	46.5	10151	28.0
1960	5690	5274	51.9	48.1	10964	29.0
1961	5936	5739	50.8	49.2	11675	29.9
POST-RENTAL ERA						
1962	6231	6425	49.2	50.8	12656	29.9
1963	6319	6978	47.5	52.5	13297	29.2
1964	6675	7528	47.0	53.0	14203	28.5
1965	6976	8622	44.7	55.3	15598	31.3
1966	7931	10204	43.7	56.3	18135	29.5
1967	8845	11655	43.1	56.9	20500	31.2
1968	9547	13170	42.0	58.0	22717	31.8
1969	10590	14766	41.8	58.2	25356	32.3
1970	11669	17235	40.4	59.6	28904	33.8

Source: Statistics Canada, National Accounts, Income and Expenditure (revised), various years.

TABLE 2

PERCENTAGE DISTRIBUTION OF CONSOLIDATED GOVERNMENT EXPENDITURE, BY FUNCTION AND BY LEVEL OF GOVERNMENT, 1969[a]

Function	Percentages of Total Spending By Level			Millions of Dollars
	Federal	Provincial-Local	All Levels	
	(1)	(2)	(3)	(4)
Defence	13.9%	-	6.5%	1815
Health and Social Welfare	32.0	21.7%	26.6	7401
Transportation and Communication	4.5	12.6	8.8	2462
Education	4.9	33.3	19.9	5554
Other[b]	44.7	32.4	38.2	10634
TOTAL	100.0%	100.0%	100.0%	27866
MILLIONS OF DOLLARS	13082	14784	27866	...
SHARES OF TOTAL EXPENDITURE	46.9%	53.1%	100.0%	27866

[a] After elimination of intergovernmental transfers.

[b] Consists mainly of spending for protection of persons and property, natural resources and primary industries, debt charges, and general government.

Source: Statistics Canada, Consolidated Government Finance, 1969 (Ottawa: Queen's Printer, 1972) derived from Table 2, p. 6.

TABLE 3

CHANGING SHARES OF CONSOLIDATED GOVERNMENT EXPENDITURE BY LEVEL OF GOVERNMENT AND MAJOR FUNCTION 1955 TO 1969[a] (INCREASE OR DECREASE IN SHARES OF TOTAL SPENDING)

Function	Federal	Provincial-Local	All Levels
	(1)	(2)	(3)
Defence	-29.9	-	-20.0
Health and Social Welfare	+10.9	+ 4.8	+ 7.1
Transportation and Communication	+ 0.5	-11.6	- 3.2
Education	+ 4.3	+ 6.2	+ 8.9
Other	+14.2	+ 0.6	+ 7.2
TOTAL CHANGE IN SHARES	-13.7	+13.7	...

[a] After elimination of intergovernmental transfers.

Source: Derived from Table 2 and Statistics Canada, A Consolidation of Public Finance Statistics, 1955 (Ottawa: Queen's Printer, 1957) Table 2, p. 6.

TABLE 4

SHARES OF EXPENDITURE GROWTH FOR ALL LEVELS OF GOVERNMENT BY FUNCTION 1933-1965 AND 1954-1965

Function	1933-1965	1954-1965
	(1)	(2)
Defence and Mutual Aid	29.3%	(-62.5%)
Veterans' Pensions and Benefits	(- 4.8)	(- 3.1)
Health	28.7	34.0
Social Welfare	16.7	18.8
Education	35.3	51.3
Transportation and Communication	12.8	14.8
Natural Resources and Primary Industries	0.4	7.4
Debt Charges	(-44.5)	9.3
General Government	20.6	0.0
Protection		7.0
Other		20.0
International Co-operation and Assistance	2.8	2.1
	100.0%	100.0%

Note: Growth for the period 1933-65 was calculated on the basis of averages for the year 1933-37, 1939 and for 1963, 1964 and 1965. For the period 1954-65, the calculation was based on averages for 1954-56 and 1963-65.

Source: Richard M. Bird The Growth of Government Spending in Canada, Canadian Tax Papers No. 51 (Toronto: Canadian Tax Foundation, 1970), p. 277.
Original sources: Dominion Bureau of Statistics, National Accounts, Income and Expenditure (various years); M.C. Urquhart and K.A.H. Buckley, Historical Statistics of Canada (Toronto: Macmillan Co., 1965), pp. 207, 209 and 211; Dominion Bureau of Statistics, Federal Government Finance (various years); D.B.S. Provincial Government Finance (various years); Municipal Government Finance (various years).

TABLE 5

ALLOCATION OF TOTAL EXPENDITURE ON FORMAL EDUCATION AND VOCATIONAL TRAINING IN CANADA, BY LEVEL OF EDUCATION, 1954-55 TO 1973-74

School Year	Elementary and Secondary		Post-Secondary			Other Formal Education[d]	Total Formal Education	Vocational Training[e]	Total
	Public[a]	Private	Teacher Training	University[b]	Non-University[c]				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A. MILLIONS OF DOLLARS									
1954-55	569.7	18.9	5.2	100.8	-	0.2	694.8	18.5	713.3
1955-56	651.3	19.8	6.6	111.4	-	0.2	789.3	18.5	807.8
1960-61	1267.3	46.9	16.2	235.4	-	0.3	1566.1	56.1	1622.2
1965-66	2324.4	75.8	20.8	723.8	-	14.0	3158.8	186.9	3345.7
1970-71[e]	4681.2	122.1	16.3	1754.3	357.2	21.8	6952.9	455.9	7408.8
1973-74[f]	5719.7	140.7	5.6	2306.8	580.5	21.4	8774.7	583.1	9357.8
B. SHARES OF TOTAL EXPENDITURE									
1955-56	80.6%	2.5%	0.8%	13.8%	-	-	97.7%	2.3%	100.0%
1960-61	78.1	2.9	1.0	14.5	-	-	96.5	3.5	100.0
1965-66	69.5	2.3	0.6	21.6	-	0.4%	94.4	5.6	100.0
1970-71	63.2	1.6	0.2	23.7	4.8%	0.3	93.8	6.2	100.0
1973-74	61.1	1.5	0.1	24.7	6.2	0.2	93.8	6.2	100.0

TABLE 5 (continued)

School Year	Elementary and Secondary: Public[a]	Elementary and Secondary: Private	Post-Secondary: Teacher Training	Post-Secondary: University[b]	Post-Secondary: Non-University[c]	Other Formal Education[d]	Total Formal Education	Vocational Training[e]	Total
	(1)	(2)	(3)	(4)	(5)	(7)	(8)	(8)	(9)
C. AVERAGE ANNUAL RATES OF CHANGE (ACTUAL)									
1954-59	14.4%	18.7%	17.4%	16.0%	-	...	14.7%	24.2%	14.9%
1959-64	12.3	10.9	17.2	23.1	-	...	14.1	29.6	14.7
1964-69	16.1	11.2	- 4.8	21.9	-	...	18.3	25.8	18.5
1969-73	8.3	4.8	-26.1	10.4	21.9%	...	9.4	8.2	9.3
1954-73	13.0	11.8	3.5	18.2	-	...	14.4	22.7	14.6

[e] denotes estimates

[a] Includes federal schools, schools for the blind and deaf and expenditures of provincial departments of education.

[b] Includes operating and capital expenditures, student aid, scholarships and bursaries paid by federal and provincial governments directly to students. Prior to 1969-70 expenditures for non-transfer students in non-university institutions were included under this heading. For 1969-70 to 1973-74, they have been excluded.

TABLE 5 (continued)

[c] Includes expenditures for community colleges and related institutions and expenditures for "R.N." diploma courses in hospitals and regional schools, and in community colleges.

[d] Federal government expenditures for assistance to education in developing countries, federal language courses, educational programs in penitentiaries, Education Division of Statistics Canada, and Education Support Branch of Secretary of State Department.

[e] Includes private business colleges but excludes private trade schools and diploma courses in hospital schools.

[f] Projections by the Education Division, Statistics Canada, based on enrolment trends and anticipated costs per pupil.

Sources: Statistics Canada, Education Division, *Survey of Education Finance* (Ottawa: Information Canada) various years; *Preliminary Statistics of Education, 1971-72* for 1968-69; *Advance Statistics of Education, 1972-73* for 1969-70 to 1973-74.

TABLE 6

THE INFLUENCE OF SELECTED FACTORS ON THE GROWTH OF
SPENDING FOR ELEMENTARY AND SECONDARY EDUCATION, BY PROVINCE

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Canada
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					(PERCENTAGES)						
1956-66											
1. Increased Enrolment	24.3	12.3	20.1	22.5	21.4	39.3	27.0	23.2	36.7	46.0	30.6
Increased Population (5-17)	18.3	9.1	14.0	16.2	14.2	33.6	22.4	17.2	35.1	41.2	24.4
Increased Attendance Rate	6.0	3.2	6.1	6.3	7.2	5.7	4.6	6.0	1.6	4.8	6.2
2. Increased Expenditure Per Pupil	75.7	87.7	79.9	77.5	78.6	60.7	73.0	76.8	63.3	54.0	69.4
Increased Expenditures on Tchrs.	50.9	58.0	58.7	57.7	43.2	39.9	47.0	49.1	46.7	36.9	43.6
-Increased Median Salaries	(44.1)	(51.7)	(52.5)	(51.2)	n.a.	(33.3)	(42.1)	(46.3)	(38.8)	(33.0)	n.a.
-Falling Pupil Teacher Ratios	(6.8)	(6.3)	(6.2)	(6.5)	n.a.	(6.6)	(4.9)	(2.8)	(7.9)	(3.9)	n.a.
Increased spending on other items	24.8	29.7	21.2	19.8	35.4	20.8	26.0	27.7	16.6	17.1	25.8
1961-66											
1. Increased Enrolment	19.8	13.3	20.8	15.0	19.6	34.0	35.1	27.5	38.1	50.6	28.5
Increased Population (5-17)	13.7	8.8	12.4	8.3	11.4	26.3	22.2	21.7	35.5	40.8	20.5
Increased Attendance Rate	6.1	4.5	8.4	6.7	8.2	7.7	12.9	5.8	2.6	9.8	8.0

TABLE 6 (continued)

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Can-ada
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1961-66 (continued)											
2. Increased Expenditure Per Pupil	80.2	86.7	79.2	85.0	80.4	66.0	64.9	72.5	61.9	49.4	71.5
Increased Expenditure on Tchrs.	52.2	53.8	60.1	60.5	37.4	40.0	35.9	42.5	43.3	31.9	40.3
-Increased Median Salaries	(35.6)	(43.6)	(48.9)	(49.2)	n.a.	(26.5)	(27.2)	(34.7)	(31.8)	(26.0)	n.a.
-Falling Pupil Teacher Ratios	(16.6)	(10.2)	(11.2)	(11.3)	n.a.	(13.5)	(8.7)	(7.8)	(11.5)	(5.9)	n.a.
Increased spending on other items	28.0	32.9	19.1	24.5	43.0	26.0	29.0	30.0	18.6	17.5	31.2

Source: J. Cousin, J.P. Fortin and C.J. Wenaas Some Economic Aspects of Provincial Educational Systems, Economic Council of Canada, Staff Study No. 27 (Ottawa: Information Canada, 1971), pp. 114-15. Original source of data: Statistics Canada.

TABLE 7

GOVERNMENT REVENUE ELASTICITIES WITH RESPECT TO GROSS NATIONAL EXPENDITURE 1933-1965 AND 1953-1965

Revenue Source	Federal	Provincial	Municipal	Total
	(1)	(2)	(3)	(4)
1933-1965:				
Income Taxes	1.64	1.86	-	1.66
Consumption Taxes	1.01	1.54	1.13	1.12
Wealth Taxes	-	0.52	0.87	0.87
Other Taxes	-	0.93	(-0.17)	0.64
Non-Tax Revenue	0.85	1.15	0.66	1.06
Total Own Revenue	1.10	1.31	0.81	...
Total All Sources	1.10	1.30	0.85	1.17
1953-1965:				
Income Taxes	0.84	5.00	-	1.19
Consumption Taxes	0.89	2.02	(-0.72)	1.14
Wealth Taxes	1.05	1.09	1.50	1.45
Other Taxes	-	2.66	(-0.12)	1.75
Non-Tax Revenue	1.00	1.27	0.81	1.13
Total Own Revenue	0.86	2.11	1.33	...
Total All Sources	0.86	1.78	1.45	1.20

TABLE 7 (continued)

Note: The revenue elasticities in this table were calculated as the ratio of average annual growth rates of various tax revenues and GNE, respectively. Changes in both tax rates and tax bases are therefor reflected in the results. The provincial income tax elasticity was calculated after adding revenue received from other governments to the income tax nominally raised by the provinces in order to adjust in part for changes in federal-provincial fiscal arrangements over time.

The average annual rates for 1933-65 and 1953-65 are based on three-year averages centered on 1934 and 1964 and on 1954 and 1964, respectively.

Source: Richard M. Bird The Growth of Government Spending in Canada, Canadian Tax Papers No. 51 (Toronto: Canadian Tax Foundation, 1970), p. 291.

TABLE 3

PERCENTAGE DISTRIBUTION OF CONSOLIDATED GOVERNMENT REVENUE
BY REVENUE SOURCE AND BY LEVEL OF GOVERNMENT, 1969

Revenue Source	Per Cent of Total Revenue By Level Federal	Provincial-Local	All Levels	Millions of Dollars
	(1)	(2)	(3)	(4)
TAXATION REVENUE:				
1. Income				
Corporations	19.6	6.5	13.3	3701
Individuals	38.5	16.1	27.8	7731
Other	1.7	0.9	1.3	368
Total Income	59.8	23.5	42.4	11800
2. Sales				
General	15.8	12.6	14.3	3973
Motor fuel and fuel oil	-	7.7	3.7	1021
Other	-	2.2	1.0	289
Total Sales	15.8	22.5	19.0	5283
3. Real Property and Business Taxes	-	25.0	11.9	3324
4. Excise Duties and Special Excise Taxes	6.2	-	3.2	894
5. Customs Import Duties	5.6	-	3.0	818

TABLE 8 (continued)

Revenue Source	Per Cent of Total Revenue By Level Federal	 Provincial-Local	 All Levels	Millions of Dollars
	(1)	(2)	(3)	(4)
TAXATION REVENUE: (continued)				
6. Estate Taxes and Succession Duties	0.7	1.1	0.9	241
7. Other	-	5.3	2.6	725
TOTAL TAXES	88.1	77.4	83.0	23085
NON-TAXATION REVENUE:				
1. Privileges, licences and permits	0.2	9.2	4.5	1245
2. Sales and services	2.6	4.5	3.5	979
3. Contributions from enterprises	1.7	3.4	2.5	702
4. Other revenue	7.4	5.5	6.5	1811
TOTAL NON-TAXATION REVENUE	11.9	22.6	17.0	4737

TABLE 8 (continued)

Revenue Source	Per Cent of Total Revenue By Level Federal	 Provincial-Local	 All Levels	Millions of Dollars
	(1)	(2)	(3)	(4)
TOTAL REVENUE	100.0	100.0	100.0	27822
MILLIONS OF DOLLARS	14524	13299	27822	...

Source: Statistics Canada, *Consolidated Government Finance, 1969* (Ottawa: Information Canada, 1972) derived from Table 1, p. 5.

TABLE 9

ALLOCATION OF REVENUES BY LEVEL OF GOVERNMENT
ON A NATIONAL ACCOUNTS BASIS, 1942-1970
($MILLIONS)

Year	Revenues From Own Sources		Shares of Revenues		Total Revenues From Own Sources
	Federal	Provincial-Local	Federal	Provincial-Local	
	(1)	(2)	(3)	(4)	(5)
TAX RENTAL ERA					
	$	$	%	%	$
1942	2010	662	75.2	24.8	2672
1943	2435	693	77.8	22.2	3128
1944	2576	721	78.1	21.9	3297
1945	2431	791	75.5	24.5	3222
1946	2595	895	74.4	25.6	3490
1947	2733	1082	71.6	28.4	3815
1948	2667	1262	67.9	32.1	3929
1949	2645	1335	66.5	33.5	3980
1950	2962	1471	66.8	33.2	4433
1951	4099	1706	70.6	29.4	5805
1952	4116	1781	72.2	27.8	6397
1953	4734	1881	71.6	28.4	6615
1954	4513	1995	69.4	30.6	6526
1955	4926	2212	69.0	31.0	7138
1956	5610	2521	69.0	31.0	8131
1957	5579	2923	65.6	34.4	8502
1958	5311	3153	62.7	37.3	8464

TABLE 9 (continued)

Year	Revenues From Own Sources: Federal	Revenues From Own Sources: Provincial-Local	Shares of Revenues: Federal	Shares of Revenues: Provincial-Local	Total Revenues From Own Sources
	(1)	(2)	(3)	(4)	(5)
TAX RENTAL ERA (continued)					
	$	$	%	%	$
1959	6035	3577	62.8	37.2	9612
1960	6406	3839	62.5	37.5	10245
1961	6662	4168	61.5	38.5	10830
POST-RENTAL ERA					
1962	6855	5057	57.5	42.5	11912
1963	7191	5482	56.7	43.3	12673
1964	8209	6102	57.4	42.6	14311
1965	8951	7032	56.0	44.0	15983
1966	9888	8123	54.9	45.1	18011
1967	10752	9262	53.7	46.3	20014
1968	11966	10723	52.7	47.3	22689
1969	14091	12276	53.4	46.6	26367
1970	15054	13745	52.3	47.7	28799

Source: Statistics Canada, National Accounts Income and Expenditure (Ottawa: Information Canada) various years.

TABLE 10

GOVERNMENT TRANSFER PAYMENTS TO OTHER LEVELS OF GOVERNMENT AS PERCENTAGES OF GROSS NATIONAL EXPENDITURE AND TOTAL GOVERNMENT SPENDING, SELECTED FISCAL YEARS 1950 TO 1970

	Canada					
Year	To Provinces	To Local Governments	Provinces To Local Governments	Local Governments To Provinces	Total	Millions of Dollars
	(1)	(2)	(3)	(4)	(5)	(6)
A. TRANSFER PAYMENTS ($MILLIONS)						
1950	250	1	171	11	...	433
1955	443	7	327	22	...	799
1960	962	32	714	17	...	1725
1965	1357	74	2560	37	...	4028
1970	3303	91	5349	62	...	8805
B. AS PERCENTAGES OF G.N.E.						(G.N.E.)
1950	1.35	0.01	0.92	0.06	2.34	18491
1955	1.55	0.02	1.15	0.08	2.80	28528
1960	2.51	0.08	1.86	0.04	4.49	38359
1965	2.45	0.13	2.60	0.04	5.22	55364
1970	3.87	0.11	3.57	0.05	7.60	85449
C. AS PERCENTAGES OF TOTAL GOVERNMENT SPENDING						(ALL LEVELS)
1950	6.23	0.02	4.26	0.27	10.78	4016
1955	6.03	0.09	4.45	0.30	10.87	7348
1960	8.30	0.27	6.16	0.15	14.88	11594
1965	7.48	0.41	14.10	0.20	22.19	18152
1970	9.05	0.24	14.65	0.17	24.11	36516

Sources: Statistics Canada, National Income and Expenditure Accounts, Historical Revision, 1926-1971 (Ottawa: Information Canada, 1972), Tables 2, 43 and 52.

TABLE 11

SUMMARY OF FEDERAL CONTRIBUTIONS TO THE PROVINCES AND MUNICIPALITIES, SELECTED FISCAL YEARS 1950 TO 1970
(PERCENTAGES)

	Unconditional			Conditional			Total		
	Provinces	Munici-palities	Total	Provinces	Munici-palities	Total	Provinces	Munici-palities	Millions of Dollars
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1950	45.1	0.5	45.6	54.4	-	54.4	99.5	0.5	274.8
1955	78.0	1.6	79.6	19.8	0.6	20.4	97.8	2.2	450.0
1960	53.4	2.4	55.8	43.2	1.0	44.2	96.5	3.5	1008.0
1965	24.5	2.4	26.9	69.2	3.9	73.1	93.7	6.3	1569.5
1970	35.6	1.6	37.2	61.2	1.6	62.8	96.8	3.2	3094.6

Sources: Statistics Canada, Federal Government Finance, 1965, and Historical Review of Governments in Canada 1952-62; and Canadian Tax Foundation, The National Finances, 1972-73, Table 10-3, p. 145.

TABLE 12

DISTRIBUTION OF FEDERAL CONDITIONAL TRANSFERS TO THE PROVINCES AND TO MUNICIPALITIES BY FUNCTION, SELECTED FISCAL YEARS, 1950 TO 1970
(PERCENTAGES)

Fiscal Year	Transportation	Health	Social Welfare	Education	Natural Resources	Other	Total	Millions of Dollars
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. TO PROVINCES								
1950	4.7	12.7	69.3	2.8	1.1	9.4	100.0	149.5
1955	18.5	37.9	33.2	4.8	4.4	1.2	100.0	89.0
1960	15.2	54.4	23.6	2.0	1.7	3.1	100.0	435.3
1965	9.1	50.9	19.8	15.4	3.9	0.9	100.0	1086.7
1970	1.8	59.0	24.3	7.0	5.7	2.2	100.0	2539.2
B. TO MUNICIPALITIES								
1950	..	..	..	..	..	..	..	..
1955	42.8	17.9	-	-	-	39.3	100.0	2.8
1960	44.6	2.9	17.5	17.5	-	17.5	100.0	10.3
1965	8.1	17.3	11.4	4.0	-	59.2	100.0	60.7
1970*	32.5	2.8	0.2	4.8	-	59.7[a]	100.0	30.5

*The data shown are based on 1969.

[a] The largest share of funds in this category are for "Sanitation and Waste Removal".

Sources: Derived from Statistics Canada, Historical Review, Financial Statistics of Governments of Canada, 1952-62; Canadian Tax Foundation, The National Finances, 1972-73; and Statistics Canada, Consolidated Government Finance, 1969, Table 3, p. 7.

TABLE 13

DISTRIBUTION OF PROVINCIAL CONDITIONAL TRANSFERS TO THE MUNICIPALITIES BY FUNCTION, PLUS UNCONDITIONAL TRANSFERS, SELECTED FISCAL YEARS, 1952 TO 1970
(PERCENTAGES)

Fiscal Year	Uncon- ditional	Conditional							Total Transfers	Millions of Dollars
		Transpor- tation	Health	Social Welfare	Education	Natural Resources	Other	Conditional		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1952	11.9	15.9	1.1	3.7	64.0	0.4	3.0	88.1	100.0	223.5
1955	11.2	15.1	1.3	4.2	66.7	0.4	1.1	88.8	100.0	327.7
1960	9.7	14.6	1.3	8.0	62.8	0.3	3.3	90.3	100.0	723.2
1965	13.3	9.5	1.0	5.0	65.2	0.5	5.5	86.7	100.0	1501.6
1970^e	10.5	6.8	1.2	4.8	75.0	0.1	1.6	89.5	100.0	3160.2

Sources: Statistics Canada, Historical Review, Financial Statistics of Governments of Canada, 1952-62; Provincial Government Finance: Revenue and Expenditure, 1970 (Estimates).

TABLE 14

SOURCES OF FUNDS FOR ALL FORMAL EDUCATION AND VOCATIONAL TRAINING IN CANADA, BY LEVEL OF GOVERNMENT, 1954-55 TO 1973-74

School Year	Local Government Taxation	Provincial and Territorial Governments	Federal Government	Non-Government (Private Sources)	Total
	(1)	(2)	(3)	(4)	(5)
A. MILLIONS OF DOLLARS					
1954-55	335.2	275.8	39.2	63.1	713.3
1955-56	343.4	333.4	48.4	82.6	807.8
1960-61	653.2	706.2	113.4	149.3	1622.2
1965-66	1036.1	1573.0	339.1	397.4	3345.6
1970-71	1761.1	4223.8	804.1	619.8	7408.8
1973-74[a]	2118.7	5540.3	881.8	817.0	9357.8
B. SHARES OF TOTAL FUNDS FOR EDUCATION					
1955-56	42.5%	41.3%	6.0%	10.2%	100.0%
1960-61	40.3	43.5	7.0	9.2	100.0
1965-66	31.0	47.0	10.1	11.9	100.0
1970-71	23.8	57.0	10.8	8.4	100.0
1973-74	22.7	59.2	9.4	8.7	100.0
C. AVERAGE ANNUAL RATES OF CHANGE (YEAR TO YEAR)					
1954-59	11.8	17.1	24.0	15.0	14.9
1959-64	9.2	16.7	7.3	23.2	14.7
1964-69	13.9	22.4	23.8	11.4	18.5
1969-73	6.0	11.7	4.6	8.6	9.3
1954-73	10.9	17.3	15.4	14.9	14.6

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[a] Projections by the Education Division of Statistics Canada, based on enrolment trends and anticipated costs per pupil.

Sources: Statistics Canada, Education Division, Survey of Education Finance (Ottawa: Information Canada) various years; Preliminary Statistics of Education, 1971-72 for 1968-69; Advance Statistics of Education, 1972-73 for 1969-70 and projections to 1973-74.

CHAPTER VI

THE REDISTRIBUTIVE IMPACT OF FEDERAL DIRECT AND INDIRECT ASSISTANCE TO ELEMENTARY AND SECONDARY EDUCATION

This chapter is concerned chiefly with the redistributive impact of federal direct spending and general intergovernmental payments on the financing of elementary and secondary education in the provinces of Canada. In particular, the empirical exercises will assess the redistributive effects of federal direct spending and indirect contributions in relation to provincial educational needs and relative provincial abilities to meet those needs.

In considering bases of redistribution in Chapter IV, the point was made that measurement of the degree and total extent of redistribution depends crucially upon the correct identification and measurement of differences in real or program need, differences in unit costs of meeting these needs, namely, fiscal need, differences in fiscal capacity and some means of distributing funds in an inverse relation to fiscal capacity per unit of need. It is appropriate, therefore, that this chapter include an examination of alternative measures of educational need, fiscal capacity and relative ability to finance education.

ALTERNATIVE MEASURES OF EDUCATIONAL NEED

The concepts of real educational need and fiscal need were discussed in Chapter IV. Table 15 shows four alternative measures of relative educational need for all provinces in the years 1960, 1965 and 1970. Since many of the other tables in this chapter are similar in format to Table 15, it is in order that this format be discussed briefly.

Wherever possible, data for Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick have been grouped into the Atlantic Region and those for Manitoba, Saskatchewan and Alberta into the Prairie Region. This was done partly to simplify comparisons with Quebec, Ontario and British Columbia and partly because of the non-availability of labour force statistics, by province, in these regions for 1960 and 1965. Even when data were available by province, calculations have also been made by region.

As clearly indicated in the heading of Table 15, the data shown by province are indexes based on the weighted national average equalling 100.0. Conversion to indexes facilitates comparisons of both historical changes in relative position of one province based on a given measure and also of cross-sectional differences based on different measures of educational need. The actual weighted averages on which the indexes were based are shown in the second to last row and the actual values by province are shown in the appendix table referred to at the bottom of each table. The last row of figures in some tables contains an index of dispersion calculated from actual values.[79] The index used permits comparison of the range of differences among the provinces according to the same measure of need over time and according to different measures at a given time.

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[79] The measure of comparative dispersion shown in the tables is the coefficient of variation which is the standard deviation divided by the arithmetic mean, expressed as a percentage.

Live births per thousand of population is a crude indicator of potential or future educational need.[80] It is not, however, a very satisfactory index of potential educational need since it fails to recognize infant and child mortality between birth and entry into the school systems. It also fails to recognize the net effects of migration to and from other countries and among provinces.

Immigration contributed substantially to the growth of educational needs in Canada as a whole in the early postwar years, but has become relatively less important since the early sixties; moreover, there is little indication that it will assume greater relative importance in the near future. Interprovincial migration has increased the educational needs of some provinces, notably Ontario and British Columbia, and decreased them in others, notably in the Atlantic Region and Saskatchewan. It seems doubtful that the relative importance of in-migration and out-migration to and from the provinces which have traditionally been net importers and exporters of school-age population will change substantially in the future. Changes in patterns of interprovincial migration are reflected in the relative sizes of school-age population on which three of the measures of educational need shown in Table 15 have been based.

The first and simplest index of relative educational need shown in Table 15 is live births in relation to the population aged five years. The Census years, 1961, 1966 and 1971 have been used because these were the only years for which population was available by single year of age. The most remarkable aspect of live births as a percentage of the five-year-old population in these years for Canada as a whole has been the decline from 110.9 per cent in 1961 to 82.6 per cent in 1966 to 45.3 per cent in 1971. The highest percentages in Canada in both 1961 and 1966 were in Newfoundland and the lowest percentages in these two years were in Quebec and British Columbia, respectively. These values are shown in Table A-1. By 1971, the highest values among the provinces were in Manitoba and Alberta (i.e. 49.6 and 49.0 per cent, respectively) and the lowest value, by a wide margin, was in Quebec (i.e. 40.0 per cent).

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[80] A substantial literature exists on the effects of social and economic factors on the birth rate. No attempt will be made to explore these relationships in this study.

Although the trend was notably inconsistent for most provinces among the three years, the changes in live births as percentages of the five-year-old population relative to the national average was upward between 1961 and 1971 in all provinces except Quebec and Newfoundland. The actual decreases in live births as percentages of five-year-old populations between 1961 and 1971, in percentage points, were as follows (Table A-1):

Newfoundland	-72.4	Nova Scotia	-65.9
Prince Edward Island	-68.4	Saskatchewan	-64.1
Alberta	-67.5	Manitoba	-62.3
Quebec	-66.9	New Brunswick	-61.8
Ontario	-66.1	British Columbia	-60.4
		TOTAL	-65.6

As discussed in Chapter IV, relative needs for educational services at any time may be estimated by reference to the numbers of children in the age groups in which there seems to be a consensus that most children should be receiving some form of education at public expense. Since the statutory age limits for schooling vary among provinces and since population statistics for intercensal years are only available by province for five-year age groups, real educational need is estimated in this study by reference to the three five-year intervals containing children aged 5 to 19. Children between 5 and 9 and 10 and 14 are assumed to represent the need for elementary education in all provinces and those from 15 to 19 the need for secondary education. Although these assumptions may slightly distort the need for elementary or secondary education in a given province, the latter in particular, this is not considered a serious problem for the purposes of this study.

While the measurement of fiscal need, which recognizes unit cost differences for meeting different types of educational need in a given place and for providing the same service in different places, is beyond the scope of this study, it is possible to recognize in our measures of relative need one major element in unit cost differences, namely, cost differences between elementary and secondary education. The age group 15 to 19 has been given a weight of 1.5 relative to the 5 to 9 and 10 to 14 age groups to allow for the higher unit costs at the secondary level. Thus, the three chief measures of relative educational need in Table 15 utilize weighted school-age population in relation to total population, to the economically active population, namely, the employed labour force, and lastly, to those persons in the population with total declared income over $2,500 in 1970, or its equivalent purchasing power in 1965 and 1960.

Cheal, one of the first to apply such measures to the Canadian provinces, expressed educational need as the ratio of school-age population (aged 5 to 19) to the major working-age population (aged 20 to 64).[81] To the extent that it fails to recognize substantial interprovincial variations in participation in the labour force by sex and age-group, the use of total population between ages 20 and 64 as a proxy for the economically active population has a major weakness as a base for interprovincial comparisons of educational need.[82] We have attempted to overcome this weakness in the present study by relating school-age children to the employed labour force.

A preferable basis for comparing real educational need among provinces to any discussed thus far is number of income receivers. The number of school-age children per thousand of all income tax returns reporting total incomes over a minimum level of say, $2,500 per year, has the added advantage that it provides some recognition of interprovincial differences in income distribution by excluding those persons whose incomes fall below this arbitrarily determined "subsistence" level. As explained in the footnotes to Tables 15 and A-1, we have deflated $2,500 in 1970 to $2,070 in 1965 and $1,946 in 1960 to obtain equivalent purchasing power in these years.[83]

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[81] John E. Cheal, Investment in Canadian Youth (Toronto: Macmillan, 1964), p. 55.

[82] For example, based on 1961-64 averages, the proportion of total labour force composed of women varied from 23.6 per cent in the Atlantic Region to 32.6 per cent in Ontario. See Frank T. Denton, An Analysis of Interregional Differences in Manpower Utilization and Earnings, Staff Study No. 15, Economic Council of Canada, April, 1966, Table 4, p. 5.

[83] The Consumer Price Index was used for this purpose. Its average value during each of the three years was 99.1, 107.4 and 129.7 in 1960, 1965 and 1970, respectively (1961 = 100.0).

It must be acknowledged that, while these adjustments recognize temporal changes in purchasing power for Canada as a whole, they do not adjust for interprovincial differences in living costs nor for changing standards of living. Unfortunately, provincial cost-of-living indexes do not exist. Statistics Canada has, however, devised inter-city indexes of retail price differentials for seven selected groupings of commodities and services bought in 11 major cities across Canada.[84] The spread of values of this index, which is based on Winnipeg equalling 100, seems sufficiently small on most major household items to suggest that adjustments in the $2,500 per year limit to reflect interprovincial differences in cost-of-living would not be sufficiently large to seriously distort the relative differences among the provinces for purposes of this study. In the absence, therefore, of composite provincial price indexes, the uniform minimum of $2,500 in 1970, or its equivalent in 1965 and 1960, are assumed to be equally valid in all provinces.[85]

The outstanding feature of the three indicators of educational need based on weighted school-age population is the similarity of the rankings of the provinces. In addition, the more closely one relates school-age population to those persons whose economic efforts must provide for the education, the greater the dispersion of values becomes. On the first point, the Atlantic Region ranks highest in educational need on all three measures and British Columbia and

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[84] See Statistics Canada, Prices and Price Indexes, April, 1973, Table 14, pp. 64-5.

[85] As explained in Chapter IV, it would be preferable if family income statistics were available for the purpose of calculating numbers of family units with incomes exceeding a subsistence level.

Ontario lowest. On the second point, it is clear from an examination of the increasing indexes of dispersion for any one year on the three measures, that the range of differences among the provinces is greater the more closely numbers to be educated are related to the economically active population (Table 15).

Another notable feature of these measures of educational need is the reversal of trends between the first and second half of the sixties for the two measures relating school-age population to the employed labour force and to those with total declared incomes over $2,500, or its equivalent. One reason for this reversal was, of course, the 35 per cent decrease in birth rates between 1960 and 1970 which was beginning to be reflected by the mid and late sixties in the size of school-age populations. Another important factor during this period was the rapid increase in the labour force due to the large numbers entering for the first time and the growing participation by women.[86]

Evidence of these trends is found in the values for all provinces shown in the second to last row of data in Table 15. To begin, total needs at the elementary-secondary level increased in relation to total population from 325 to 362 weighted school age children per thousand between 1960 and 1970 or by 11.4 per cent. Most of this increase, 8.3 per cent, occurred between 1960 and 1965. By the second half of the sixties, the combined impact of falling birth rates five years earlier and the entry of children from the baby boom of the late forties into the adult population resulted in a much smaller increase of only 2.8 per cent over 1960. Between 1971 and the early 1980's, educational need according to this measure will undoubtedly decline in absolute terms.[87]

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[86] To the extent that many women earned less than $2,500 during the years in question, the growing participation of women may not be totally reflected in the measures based on declared incomes over $2,500.

In relation to the labour force and persons with tax returns over $2,500 in 1970, or equivalent purchasing power in earlier years, educational need reached 967 and 1789 weighted school-age children per thousand, respectively, in 1965 and then fell to 917 and 1174, respectively in 1970. In addition to the fact that birth rates dropped as the labour force expanded, the very rapid increase in incomes between 1965 and 1970 helps to account for the greater decrease in total educational need relative to tax returns than to the labour force--5.8 per cent compared to 33.3 per cent.

In terms of interprovincial differences, the most interesting features of the three measures based on school age population are the ranges of values and how they have changed during the sixties. In relation to total population, the highest province, Newfoundland, had 1.3 times as many school-age children per thousand as British Columbia in 1970. Based on the labour force and tax returns over $2,500, the corresponding relationships between these two provinces were 1.8 and 2.3, respectively. The chief reason for the wider disparity in apparent educational need in the case of the measure based on labour force statistics is that participation rates, of women in particular, as noted earlier, vary considerably between the Atlantic Region and the rest of Canada.

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[87] For example, the Education Division of Statistics Canada has recently published projections which suggest that the population aged 5 to 17 in Canada could decline from 5,880 thousand in 1971-72 to 5,055 thousand in 1983-84. Statistics Canada, Education Division, Enrolment Fluctuations and Patterns for the Future. A paper presented to the Association of Universities and Colleges of Canada Annual Conference, Ottawa, October 29-November 1, 1973 by Miles Wisenthal, Tables 1 and 2, pp. 24-27.

ALTERNATIVE MEASURES OF FISCAL CAPACITY AND ABILITY TO FINANCE EDUCATION

Several approaches to the measurement of fiscal capacity were discussed at length in Chapter IV. The question of which possibility within the spectrum of possibilities for measuring fiscal capacity provides the most accurate base for use in equalization programs has not been resolved. It was shown that the concept of fiscal capacity is elusive and that specific techniques for measuring it tend to be arbitrary and fraught with numerous conceptual and practical difficulties. Except to register a preference for measures which recognize variations in both the economic structures of the provinces and in taxing practices, no attempt was made to resolve the various arguments for and against modifications in the simple income approach.

Perhaps the best answer to the problem of selecting a measure of fiscal capacity is to adopt the procedure used by the United States Advisory Commission on Intergovernmental Relations and use several measures, each representing a different position in the range of possibilities extending from the total pool of resources from which most taxes are paid to the bases on which taxes are actually levied.[88] If the ACIR experience may be taken as a guide to the results of a similar exercise for Canada, it will be found that the same provinces and their local jurisdictions will have relatively low and high fiscal capacities regardless of which index is used. It will be in the middle range of provinces, where fiscal capacities approximate the national average, that the selection of the measure of fiscal capacity may have critical consequences for the relative positions of the various provinces for purposes of fiscal adjustment. In addition, we can expect to find considerable variation in the range or dispersion of values depending on the index of fiscal capacity used. The purpose of this section is to select four measures of fiscal capacity and then to apply these in estimating the relative abilities of the various provinces to finance all public services and to finance elementary and secondary education.

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[88] See ACIR Report, M-16, op.cit., pp. 54-55.

Before examining the statistical results, it will be useful to describe briefly the four measures of fiscal capacity chosen. The first measure, personal income, is the simplest and most commonly used indicator of economic well-being available on a province-by-province basis. It is a logical choice to represent the extreme "income" approach described in Chapter IV. The second measure of fiscal capacity consists of total declared income over $2,500 per annum as reported to the Department of National Revenue for taxation purposes in 1970 before exemptions and deductions. Amounts equivalent in real purchasing power have been used for earlier years based on adjustments using the Consumer Price Index. For example, calculations for 1960 and 1965 are based on numbers of taxpayers reporting incomes over $1,946 in 1960 and $2,070 in 1965. The reason for the inclusion of this measure is that it gives some recognition to one of the major objections to personal income as a measure of fiscal capacity, namely, that it does not allow for provincial differences in income distribution.

The third measure of fiscal capacity, taxable income, is also derived from taxation statistics of the Department of National Revenue. It was chosen because it excludes the lowest levels of income and also reflects basic and dependents' exemptions for all taxpayers. Because it reflects the actual exemptions allowed for tax purposes, taxable income is regarded as a better measure of fiscal capacity than total declared income above an arbitrary subsistence level.

Finally, the measure of fiscal capacity chosen to estimate the differential tax potential of the provinces is the so-called representative tax system. In the general discussion of this approach to measuring fiscal capacity, in Chapter IV, it was noted that such a system recognizes, implicitly or explicitly, differential tax potential, differing levels of resource endowment, the relative sizes of other components of the total tax base and current political judgments concerning their cultivation.

The technique used to implement a representative tax system approach to measuring fiscal capacity is to evaluate the bases available for taxation in each province and then to estimate the amount of revenue each province could raise if all applied uniform tax rates.

In this study, the yields of 16 sources of provincial revenue at national average rates will be used to represent the differential tax potential of the Canadian provinces in 1967 and 1970. The 16 provincial revenue sources included were:

1. Personal income tax
2. Corporation income tax
3. Succession duties and shares of estate tax
4. General sales tax

5. Motor fuel tax
6. Motor vehicle revenues
7. Alcoholic beverage revenues
8. Forestry revenues
9. Oil revenues
10. Natural gas royalties
11. Sales of crown leases and reservations on oil and natural gas lands
12. Other oil and gas revenues
13. Metallic and non-metallic mineral revenues
14. Water power rentals
15. Other taxes
16. Other revenues

This comprehensive representative tax system was developed by the Canada Department of Finance implementing the revenue equalization formula under the Federal-Provincial Fiscal Arrangements Act, 1967. This formula was in effect for the period 1967-72.[89]

Local taxation revenue was added to the yield of the above representative provincial tax system for 1970 in order to approximate a comprehensive measure of provincial and local fiscal capacity. It is recognized that actual local taxes collected, mainly from property taxes, are not the same as "representative" local tax rates applied to all property tax bases, but an indication of the extent to which this source of revenue was actually exploited in the various provinces. The inclusion of local taxation revenue is justified because it is essential to have a comprehensive measure of provincial-local fiscal capacity. In addition, no "representative" approach to measuring local tax potential exists or could be developed for purposes of this study. Finally, a precedent was set by the federal government for including actual local taxation when it decided, early in 1973, to include local school tax revenues in the equalization formula. On balance, it was felt that any distortion caused by inclusion of actual local taxation revenues was more than offset by the value of having a comprehensive estimate of provincial-local fiscal capacity based on the representative tax system approach.

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[89] The Federal-Provincial Fiscal Arrangements Act, 1972 extended the equalization formula to 1977 and broadens the base to include 19 sources of provincial revenue. The three revenue sources were health insurance premiums, race track taxes and provincial share of income tax on power utilities. In the federal budget speech of February 19, 1973, it was announced that the revenue equalization formula would be expanded, effective April 1, 1973, to include local school taxes. The net effect of this measure is expected to be an additional transfer of funds to the seven provinces which presently receive equalization payments.

Values of the first three measures of fiscal capacity per capita of population (i.e. relative ability to finance all public services), expressed as indexes based on the national average, are shown in Table 16 for 1960, 1965 and 1970. The actual values on which the indexes were based are shown in Appendix Table A-2. Comparable values of ability to finance education, calculated using weighted children of school-age are shown in Table 17 and Appendix Table A-3. Measures of fiscal capacity per capita of population and per weighted child of school-age based on the representative tax system plus local taxation are shown in Table 18 for 1967 and 1970, expressed as indexes. The actual values on which these indexes were based are shown in Appendix Table A-4.

The most notable feature of Tables A-2, A-3 and A-4 which contain the actual values of fiscal capacity per capita and per child of school-age, are the great disparity among the provinces in the relative economic status of their populations and in their apparent relative financial abilities to educate their school-age children. For example, in 1970 the Province of Ontario had personal income equalling $10,634 per weighted child of school-age (5 to 19). This was 2.3 times as great as the corresponding value of $4,634 for Newfoundland. The corresponding relationships between amounts per school-age child based on total declared income over $2,500, taxable income and yield of a representative provincial tax system plus local taxation revenue in these two provinces were 3.0, 3.4 and 2.9, respectively.

A second feature of Tables A-2, A-3 and A-4 is the high degree of uniformity in the rankings of the provinces on all four measures in terms both of general ability and ability to finance education (i.e. per child of school-age). Provinces in the Atlantic Region ranked lowest in most cases. Ontario, British Columbia and Alberta ranked predominantly first, second and third, respectively with some interchanging between Ontario and British Columbia. Manitoba, Saskatchewan and Quebec occupied the middle range of values, falling close to the national average in most instances.

There were, of course, some exceptions to this general pattern of rankings among the provinces. In 1970, Saskatchewan's indexes relative to the national average dropped in all cases below their 1965 levels. In fact, Saskatchewan ranked lower than Nova Scotia on the first three of the four measures in 1970. The fact that the Saskatchewan economy is heavily agricultural accounts for wide variations in index values from year to year.

Additional insights into interprovincial variations according to the four measures may be gained by examining the coefficients of dispersion shown in the bottom rows of Tables 16, 17, and 18. One observable feature of all three tables is that, for any one of the three years shown, the indexes of dispersion became progressively larger for the measures based on personal income, total declared income over $2,500, and taxable income, while those measures based on the yield of a representative provincial tax system plus local taxation were slightly lower. For example, in 1970 the four indexes of dispersion corresponding to these four measures of fiscal capacity per capita were 21.5, 31.7, 36.5 and 34.6 per cent, respectively. The trend in values is similar but the spread among provinces somewhat greater for indexes based on fiscal capacity per child of school age. The four corresponding indexes of dispersion for 1970 were 27.4, 37.6, 42.2 and 38.9, respectively. The reason for this wider dispersion than for values based on ability to finance all public services is the fact that provinces with lower fiscal capacities have higher birth rates and hence have higher proportions of school age population to total population. The opposite situation prevails in provinces with higher levels of fiscal capacity. The result is a relatively higher index of ability to finance education in rich provinces and a lower one in poor provinces than prevails when measures are based on total population.

A second notable feature of these indexes of dispersion is that they indicate a decrease in interprovincial differences in general ability and in ability to finance education during the sixties based on all four measures of fiscal capacity. For example, the index of dispersion based on personal income per capita decreased from 25.7 per cent in 1960 to 21.5 per cent in 1970 or by 4.2 percentage points. The corresponding decrease in interprovincial values based on personal income per child of school age was from 35.1 to 27.4 per cent in 1970 or by 7.7 percentage points. Similar declines are apparent in relative general ability and ability to finance education based on the other three measures of fiscal capacity over the periods covered.

Most provinces were either above or below the national averages of relative ability based on all four measures in the three years for which data are shown in Tables 16, 17 and 18. The exceptions are found in the Prairie Provinces. Ontario and British Columbia were well above the national average on all measures in all years while the Atlantic Provinces were well below it in all three years. For exa[illegible]e, the indexes for the Atlantic Region in 1970 based on each of the four measures of fiscal capacity per child of school-age were 66.0, 57.0, 52.3 and 51.0 per cent. As low as these values may seem, they represent a substantial improvement of the Atlantic Region relative to the national average over the previous years shown in all four cases.

Quebec's ability to finance education relative to the national average in 1970 was 86.5, 85.2, 82.8 and 84.6 based on the four measures of fiscal capacity per weighted child of school age. In general, these values represent slight improvements in the position of Quebec over the previous years shown, but not as substantial as the improvement experienced by the Atlantic Region.

Ontario's fiscal capacity per weighted unit of educational need in 1970 was 123.2, 127.6, 131.3, and 119.7 per cent of the national average based on each of the four measures. As one might expect in view of the improved positions of the Atlantic Region and Quebec, these values are somewhat lower than Ontario's corresponding values in previous years--substantially lower in the case of taxable income per child which declined from 145.8 to 131.3 per cent of the national average between 1960 and 1970.

Manitoba had the least variation from the national average of any province based on the four measures of fiscal capacity per child of school age in 1970. The values, which were 95.3, 90.8, 89.3 and 91.7 per cent, represent moderate decreases in Manitoba's relative position based on personal income per child and taxable income per child but slight increases based on declared income over $2,500 or its equivalent purchasing power and the yield of a representative tax system.

Saskatchewan is the province which appears to have suffered most relative to the national average, at least between 1965 and 1970. As already noted, income and taxation statistics for Saskatchewan vary considerably from year to year due to the predominance of agriculture in that Province's economy. Three or five year averages of fiscal capacity per child would reduce this problem but would have complicated seriously the task of estimating empirically the extent of redistribution among provinces to be based on these measures. In any case, although Saskatchewan's relative position improved modestly between 1960 and 1965 based on personal income and taxable income, it declined sharply between 1965 or 1967 and 1970 on all four measures. Saskatchewan's fiscal capacity per weighted child of school age in 1970 based on the four alternative measures were 69.8, 61.9, 58.0 and 93.1 per cent.

The values for Alberta's fiscal capacity per child in 1970 relative to the national average were 96.3, 92.9, 93.0 and 120.0. The probable explanation for the exceptionally high value based on the yield of a representative provincial tax system plus local taxation is the oil and gas revenues collected by the government of Alberta. While the oil and other resource-exploiting companies must pay royalties into government coffers, large proportions of their dividend and interest payments go to absentee shareholders. Hence, the proceeds of the Alberta oil resources are reflected in the tax revenue of the province to a much greater extent than in the incomes of its residents. A similar situation appears to exist, but to a lesser extent, in Saskatchewan, discussed above. This may be due to the potash-mining operations in that province.

Based on the first three measures of fiscal capacity, per capita and per child, the relative position of the Prairie Region appears to have declined over the periods examined. This is the most undesirable feature of the changes in relative positions shown in Tables 16, 17 and 18 since this region was already below the national average of fiscal capacity per capita and per child in 1960 and 1965. This situation has obviously been aggravated by the unusual declines in Saskatchewan's position but has been strongly influenced by deterioration in the positions of Manitoba and Alberta as well.

In view of the detailed discussion of the relative merits of the income versus the representative tax system approach to measuring fiscal capacity, it will be useful to examine the differences in the indexes of relative ability to finance education based on these measures only. The position of the Atlantic Region relative to the national average, in terms of 1970 values, was substantially lower based on a representative provincial tax system than that based on personal income, 51.0 compared to 66.0 per cent. The opposite situation was true for the Prairie Region where the relative position based on a representative provincial tax system was substantially higher than that based on personal income, 105.1 compared to 88.9 per cent. The major reason for this situation is probably the absentee ownerships of income-producing property in the Prairie Region, noted above, particularly in Alberta.

The United States Advisory Commission on Intergovernmental Relations found similar differences for an earlier period between income and representative tax system series between New England and Mideastern states on the one hand and Plains, Mountain and Southwestern states on the other. In addition to greater absentee ownership of income-producing property and resources in the Western states, the Commission noted also the apparently higher ratios of taxable capacity to personal income in the American West as a possible explanation for the above differences. In particular, the ACIR report noted that:

> . . . the low fixed capital requirements of distribution and services concentrated in areas of greater population density, the older age structure, both residential and industrial, in the eastern part of the U.S., and the changes which have taken place in farmland values.[90]

It is necessary to recognize the crucial importance of accurate measurement of fiscal capacity in devising alternative methods of intergovernmental redistribution and in evaluating the redistributive effects of existing intergovernmental fiscal transfers. All redistributive transfers allocate funds in an inverse relation to fiscal capacity per unit of program need. In this case, we have used total populations to represent relative needs for all public services and the weighted provincial populations of school age (5 to 19) to represent the relative needs for elementary and secondary education. The values of the indexes based on four alternative measures of fiscal capacity per capita and per child of school age shown in Tables 16 to 18 will be used as the basis for determining redistribution alternatives and for evaluating the redistributive effects of existing federal-provincial fiscal transfers in the remainder of this chapter.

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[90] ACIR, op.cit., p. 91.

REDISTRIBUTIVE IMPACT OF ALTERNATIVE ALLOTMENT FUNCTIONS

From discussions in the early chapters of this dissertation, it will be recalled that intergovernmental fiscal transfers may be used to accomplish both allocation and redistribution objectives. Allocation objectives consist of the preservation or achievement of balance between spending needs and revenue means for recipient governments in aggregate terms and shifting of the patterns of resource allocation within the recipient jurisdictions to preserve or establish levels or standards of service considered desirable to the donor government. Unconditional fiscal transfers, distributed in direct relation to the relative fiscal capacities of the recipients may serve the objective of preserving or re-establishing fiscal balance between spending needs and revenue means for the recipient governments. Functional, conditional or shared-cost grants have as their major purpose, the influencing of levels or standards of service provided by the recipient governments. Such grant programs may also assist in promoting better fiscal balance and accomplish some redistribution. Their major objective, however, is to influence the pattern of spending in the recipient jurisdictions.

The use of intergovernmental fiscal transfers to accomplish redistribution arises mainly because of extreme differences in real income levels among regions and, as a result, great differences in the tax rates necessary to provide minimally acceptable standards of public services, including education. While the need for alleviation of this problem and the concept of redistribution or equalization seems to be widely accepted, it is much more difficult to reach agreement on the extent to which fiscal redistribution should or can be pursued and the means for accomplishing it. The various positions taken depend essentially on political philosophy held. All that can be assumed here is that some intergovernmental fiscal redistribution is necessary and desirable. Our purpose is to examine the factors underlying the degree and extent of intergovernmental fiscal redistribution achieved among Canadian provinces using the alternative measures of fiscal capacity examined in the previous section and alternative allotment ratios based on them. These exercises will demonstrate the implications of alternative methods of fiscal redistribution which differ with respect to measure of fiscal capacity and the mathematical form of their allotment functions.

Once the political decision to effect fiscal redistribution has been made, the extent to which it is successfully achieved depends on the correct identification and measurement of program need, on the correct identification and measurement of fiscal capacity and on the mathematical function which interrelates them and specifies an allotment ratio per unit of need. Regardless of how program need and fiscal capacity are measured, all redistributive allotment formulas allocate a given appropriation in inverse relation to fiscal capacity per unit of need.

Since all redistributive transfers adjust for differences in fiscal capacity, the same measure of aggregate fiscal capacity may be used for allocating a general purpose or a special purpose appropriation. The measure of program need will, however, vary by program. As noted earlier in this chapter the relative sizes of total provincial populations will be used as a measure of relative needs for all public services and children of school age, weighted to take account of the higher unit cost of secondary education, will be used to approximate educational needs.

Three alternative mathematical functions which may be applied to specify each recipient government's allotment ratio per unit of need are: a linear expression, a rectangular hyperbola and a parabola. All three functions express an inverse relationship between a recipient government's fiscal capacity per unit of need and its allotment ratio per unit of need.[91] The mathematical form of these expressions and some of their characteristics are summarized in the following table. The degree of redistribution consists of the rate at which the recipient government's allotment ratio (A) decreases as its fiscal capacity ratio (C) increases. Appendix Table A-5 shows the allotment ratios which would have applied to each of the Canadian provinces in

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[91] It will be recalled from the discussion in Chapter IV that a fiscal capacity ratio (C) is defined as the ratio of a province's fiscal capacity per unit of need (e.g. per weighted child of school age) to the average fiscal capacity of all provinces per unit of need; and that an allotment ratio (A) is defined as the ratio of a province's federal receipts per unit of need to the average receipt of all provinces per unit of need.

The Mathematical Forms and Characteristics of Three Alternative Redistributive Allotment Formulas

Type of Function	Mathematical Form	Degree of Redistribution[a]	Major Characteristics
Linear	$A1=(1-KC)$	$\Delta A1=\frac{dA1}{dC}$ $=-1+K$ A1 decreases by a constant amount as C increases	If the value of C for any recipient increases by a given amount, the value of A1 will decrease by a fixed amount regardless of whether The recipient jurisdiction was relatively rich ($C>1$) or relatively poor ($C<1$)
Hyperbolic	$A2=1/C$	$\Delta A2=\frac{dA2}{dC}$ $=-1/C^2$ A2 decreases at a decreasing rate as C increases	For a given increase in C, the value of A2 will decrease faster for poor recipients ($C<1$) than for rich recipients ($C>1$)
Parabolic	$A3=(1-KC)^2$	$\Delta A3=\frac{dA3}{dC}$ $=-1+KC$ A3 decreases at a constant rate as C increases	For a given increase in C the value of A3 will decrease at a constant rate for all recipients.

A1, A2, A3 = allotment ratio (i.e. ratio of a province's federal receipts per unit of need to the average federal receipt of all provinces per unit of need).

C = fiscal capacity ratio (i.e. the ratio of the recipient's fiscal capacity per unit of need to the weighted average fiscal capacity of all recipients per unit of need).

K = a constant with a value between .01 and .99.

[a] The degree of redistribution per unit of need consists of the rate at which A1, A2 or A3 decreases as C increases. It is the first derivative of the respective functions or the slopes of the plotted functions.

1970 on the basis of the three alternative allotment formulas applied to each of the four measures of fiscal capacity examined in the previous section. In these examples, the constant (K) has been assigned the value .5. A higher value would result in less fiscal redistribution among provinces and a lower value would accomplish greater fiscal redistribution under both the linear and the parabolic functions (A1 and A3). The hyperbolic function (A2) does not contain a constant.

The fiscal capacity ratios used in calculating these allotment ratios were derived from Appendix Tables A-3 and A-4 and are shown in Table A-5 as Ao=C. The reason for this notation is the fact that these are the allotment ratios which would apply if there was zero redistribution (i.e. if a federal appropriation were distributed in direct proportion to fiscal capacity per unit of need).

To better compare the redistributive impacts of the alternative formulas, the ratios in Table A-5 have been converted to the same basis relative to the national average (i.e. 1.00). These values are shown in Table 19 and those based on one measure of fiscal capacity, taxable income, have been plotted in Figure 1 for illustrative purposes.

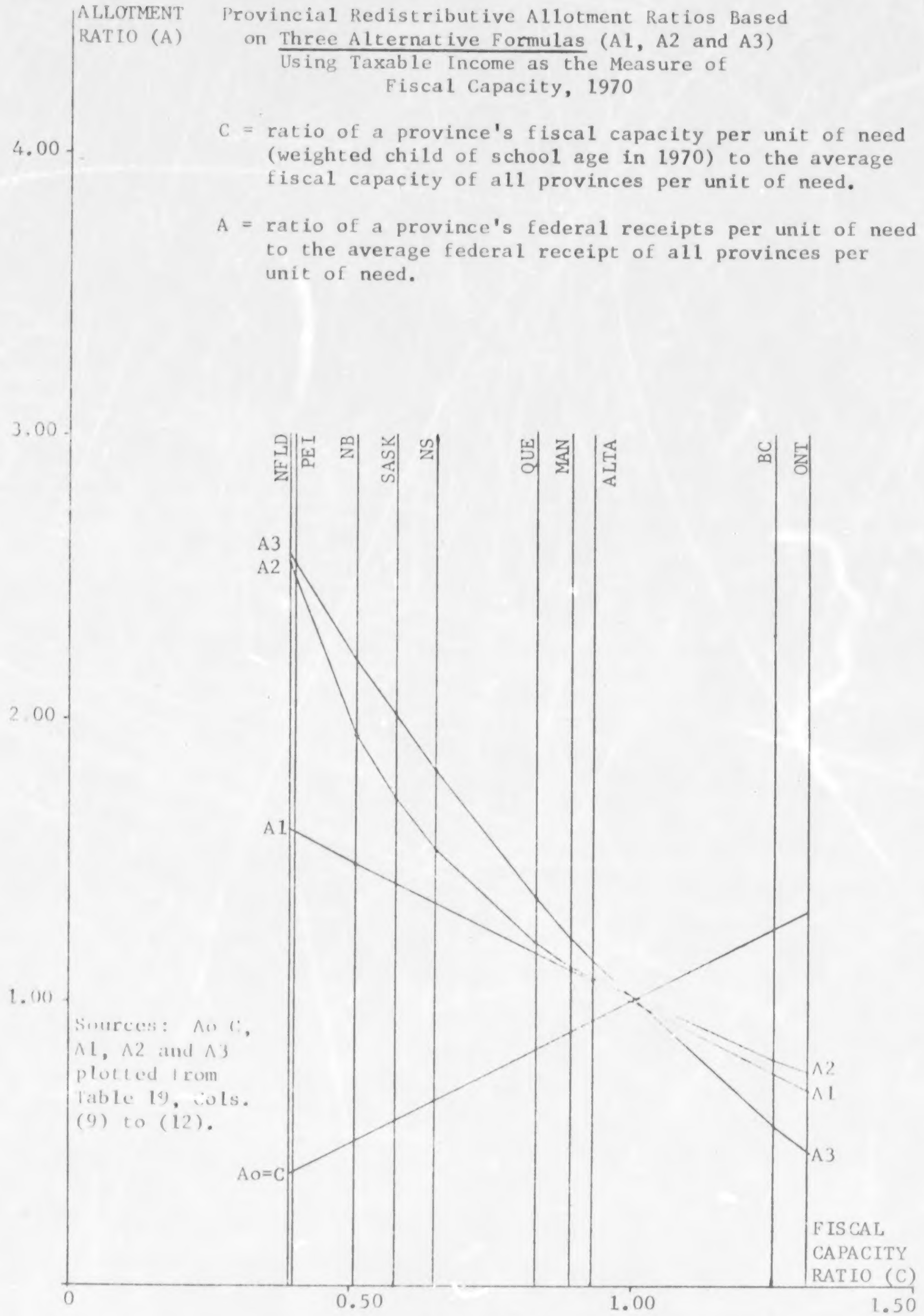
It will be useful to compare the allotment ratios for the provinces with the highest and lowest fiscal capacity ratios in 1970. Newfoundland is lowest on all four measures of fiscal capacity. Ontario is highest on the first three measures, namely, personal income, total declared income over $2,500 and taxable income. While British Columbia and Alberta had higher fiscal capacity ratios than Ontario based on the yield of a representative provincial tax system plus local taxation (See

FIGURE 1

Provincial Redistributive Allotment Ratios Based on Three Alternative Formulas (A1, A2 and A3) Using Taxable Income as the Measure of Fiscal Capacity, 1970

C = ratio of a province's fiscal capacity per unit of need (weighted child of school age in 1970) to the average fiscal capacity of all provinces per unit of need.

A = ratio of a province's federal receipts per unit of need to the average federal receipt of all provinces per unit of need.



Sources: Ao C, A1, A2 and A3 plotted from Table 19, Cols. (9) to (12).

Appendix Table A-5 Column 13), Ontario and Newfoundland will be used for consistency of comparison.

It will be useful first to examine the actual allotment ratios, A1, A2 and A3, for these two provinces based on one of the four measures of fiscal capacity, taxable income, as shown below:

Allotment Function	Newfoundland C=0.390	Ontario C=1.313	Province Equal to National Average C=1.00
A1	0.805	0.344	0.500
A2	2.564	0.762	1.000
A3	0.648	0.118	0.250

Source: Appendix Table A-5, Cols. 9 to 12.

To better facilitate comparison among these alternative ratios it will be more useful to present them as converted to the common national average ratio of 1.00. These are the values which were plotted in Figure 1:

Allotment Function	Newfoundland C=0.390	Ontario C=1.313	Province Equal to National Average C=1.00
A1	1.61	0.69	1.00
A2	2.56	0.76	1.00
A3	2.59	0.47	1.00

Source: Table 19, Cols. 9 to 12.

Based on the linear function (A1), for every dollar received by the province with national average ability to finance education, Newfoundland would receive $1.61 and Ontario would receive $0.69. The hyperbolic function (A2) would give Ontario slightly more per unit of need but accomplish considerably more redistribution in that Newfoundland would receive 337 per cent as much as Ontario compared to 233 per cent using the linear expression. The highest degree of redistribution would be achieved by a parabolic allotment function (A3) which would give Newfoundland 551 per cent as much as Ontario per unit of need (i.e. $2.59 compared to $0.47). Similar, but less dramatic, differences in the redistributive impacts of the three allotment functions are apparent when calculations are based on the other three measures of fiscal capacity.

A second way to examine the implications of the three functions is with a changing distribution of fiscal capacity ratios (C) over time. Here, it is necessary to consider the rate at which A decreases as C increases, or the first derivatives of the functions. These values are shown for each of the three allotment functions based on four measures of fiscal capacity per weighted child of school age, in Table 20, by province. The basic characteristics of these first derivatives were summarized on page 158 above. It will be useful, however, to analyze the behaviours of these functions in terms of the values shown in Table 20 using personal income per child of school age as the measure of relative ability to finance education.

The first derivative of the linear function (A1) is a constant, in this case -.5. The fact that the value is the same for all provinces means that the allotment ratio (A1) will decrease by a fixed amount for a given increase in the fiscal capacity ratio (C), regardless of whether the province was relatively rich or poor. In the case of the hyperbolic function, A2 decreases at a decreasing rate as C increases. Thus, for a given increase in the value of C, a poor province loses much more per unit of need than a rich province. For example, for a given increase in C in Newfoundland and Ontario A2 would decrease by 5.26 times as much in Newfoundland as in Ontario (i.e. -3.467 compared with -0.659).

For the parabolic function, A3 decreases at a constant rate as the fiscal capacity ratio (C) increases. Thus, the actual amount of decrease in A3 experienced by poor provinces will still be greater than that experienced by rich provinces, although the difference will be much less than that experienced using A2 as the allotment ratio. For example, A3 would decrease by 1.91 times as much in Newfoundland as in Ontario for a given increase in C in both provinces (i.e. -0.732 compared with -0.384).

It is clear fom these examples that, for a given increase in the fiscal capacity ratio, over time, all provinces would lose the same amount of federal funds per unit of program need under a linear allotment function (A1). Under a hyperbolic allotment function (A2), the poor province would lose much more than the rich province; and under a parabolic function the poor province would still lose more than the rich province but the differential in amount lost would be much reduced. In the absence of social rates of return to alternative transfer programs, it is not possible to choose among these or other alternative allotment functions on grounds of allocative efficiency. Lacking such knowledge, the choice among alternative allotment formulas and the degrees of redistribution implicit in them, remains essentially political. In any case, the most important criterion in evaluating a transfer program in financial terms may not be the degree of redistribution but the total extent of redistribution, that is, the share of the total federal appropriation which is reallocated from rich to poor provinces.

The total extent or amount of redistribution depends on the allotment function and the distribution of fiscal capacity ratios, given the distribution of educational need, measured in this case by the number of weighted children of school age. Each of these factors influences the total extent of fiscal redistribution achieved and since redistribution is a relative measure, a change in any one of these variables for one province affects the shares of a total appropriation received by all other provinces and the total extent of fiscal redistribution accomplished. Each province's share of the total federal appropriation is determined as follows:

$$Si = \frac{AiEi}{\sum_{i=1}^{n}(AiEi)}$$

where Ai is the province's allotment ratio Ei is the province's number of units of educational need (i.e. weighted school age children).

The Provincial shares of a total appropriation corresponding to the allotment ratios examined above and shown in Table A-5 are presented in columns (1) to (4) of Tables 21 to 24 for each of the four measures of fiscal capacity developed earlier in this chapter. To determine the extent of fiscal redistribution, it is necessary to compare the alternative provincial shares, S1, S2 and S3 with the provincial shares as they would have been without fiscal redistribution, that is, based on Ao = C for each province. The sum of the increases in shares received by the poor provinces (C<1) less the sum of the decrease in shares by these provinces constitutes net fiscal redistribution. Conversely, it may be calculated as the sum of shares lost by the rich provinces ($C>1$) less the sum of shares gained by the rich provinces. Thus, net fiscal redistribution may be expressed in the following equation:

$$P-p = R-r$$

where P = shares gained by poor provinces
p = shares lost by poor provinces
R = shares lost by rich provinces
r = shares gained by rich provinces

The changes in provincial shares and the net fiscal redistribution which would occur using each of the three alternative allotment functions are shown in Columns (5) to (7) of Tables 21 to 24.

It will be useful to begin the discussion of these results with a close examination of Table 21, which shows the changes in shares and extent of redistribution among the provinces based on the three allotment formulas in relation to personal income per weighted child of school age for 1970. If a federal transfer were distributed in direct relation to personal income per unit of need (i.e. $A = C$), Ontario would receive 42 per cent, Quebec 25 per cent, the Prairie Region 15 per cent, British Columbia 11 per cent and the Atlantic Region 7 per cent of a total federal appropriation (Column 1). When the function $A1 = (1 - .5C)$ is used to determine allotment ratios per unit of need in each province, the resulting shares of a total federal transfer (S1) received by each province would be as shown in Column 2. Compared to the distribution of shares when there was presumed to be no redistribution, Ontario and British Columbia would lose 15.8 and 2.9 per cent of the total appropriation, respectively, and the other eight provinces would gain proportions as shown in Column 5. Quebec's share would increase by 7.88 percentage points to 33.11 per cent, the Atlantic

Region's share would increase by 7.09 points to 14.01 per cent and the Prairie Region's share would increase by 3.77 points to 18.77 per cent. The total extent of redistribution from rich (R>1) to poor (R<1) provinces would be 18.74 points (i.e. the net increase in shares by the poor provinces or the net loss of shares by the rich provinces, in this case Ontario and British Columbia). The general patterns of redistribution of provincial shares based on allotment functions A2 and A3 are similar to that based on A1 which we have just examined in that shares received by Ontario and British Columbia would fall and those received by the other eight provinces would increase. Except for this basic similarity, however, the actual share received by a given province may be greater or less than that based on A1.

It is apparent from Table 21 that the poorest provinces would receive progressively larger shares of the total appropriation under both allotment ratios A2 and A3 and that the richest provinces would receive progressively less. This fact results from the characteristics of the three functions or, in other words, from the differences in degrees of fiscal redistribution per unit of need achieved using a linear, hyperbolic or parabolic function.

The only two provinces with fiscal capacity ratios less than unity, whose shares of a total federal appropriation would be less under A2 or A3 than A1 are Manitoba and Alberta. The values of C for these two provinces in 1970, based on personal income per child, were 0.953 and 0.963, respectively. Manitoba's share would be the same based on A1 and A3 (4.74 per cent) and slightly less based on A2 (4.51 per cent). Alberta's share would be greatest under A1 (8.07 per cent), slightly less under A3 (8.04), and least under A2 (7.68).

The net effect of these distributions of provincial shares using personal income as the measure of fiscal capacity is that the allotment formula A1 achieves the least total fiscal redistribution among the provinces, (18.74 per cent), A2 only slightly more (18.80) and A3 substantially more (27.19). If total extent of fiscal redistribution were the only criterion of selection among the three alternative formulas, A3 would be the choice. If K, the constant, were assigned a value lower than 15, the values of A1 and A3 would be higher than these values, but the relative difference in the amounts of redistribution would be similar. The extent of redistribution using A2 would be the same as that shown above (18.80 per cent) because there is no constant in the allotment function for A2.

As noted above, provincial shares of a total appropriation using total declared income over $2,500, taxable income and the yield of a representative provincial tax system plus actual local taxation revenues as measures of fiscal capacity per child are shown in Tables 22-24 respectively. The patterns of distribution of shares among the provinces are similar to those described above based on personal income except that the wider distributions of fiscal capacity ratios would result in differing total amounts of redistribution as follows:

MEASURE OF FISCAL CAPACITY	SOURCE	AMOUNTS OF REDISTRIBUTION BASED ON A1	A2	A3
personal income	Table 21	18.74	18.80	27.19
total declared income over $2,500	Table 22	23.07	23.36	32.96
taxable income	Table 23	25.95	26.25	36.65
yield of representative provincial tax system plus local taxation	Table 24	20.63	22.26	30.53

The relationships among the three redistribution alternatives are similar within each of the four measures of fiscal capacity. Use of $A3 = (1 - .5C)^2$, the parabolic function, results in the greatest amount of fiscal redistribution, $A1 = (1 - .5C)$, the linear expression, the least redistribution and $A2 = 1/C$, the hyperbolic function, just slightly more redistribution than A1.

ESTIMATED FISCAL REDISTRIBUTION ACCOMPLISHED BY TOTAL FEDERAL-PROVINCIAL TRANSFER PAYMENTS

It is now proposed to make use of the four measures of fiscal capacity and the conceptual framework just illustrated to assess the total extent of redistribution and allotment ratios per unit of need of federal direct and estimated indirect contributions to elementary and secondary education.

It will be useful to begin with a comprehensive examination of the redistributive effects of all federal transfers to provincial and local governments. The basic data on which the calculations have been based are shown in Tables A-7 and A-8. The extent of fiscal redistribution accomplished by all federal intergovernmental transfer payments in 1970 relative to the four measures of fiscal capacity developed earlier in this chapter, is shown in Table 25.

Unconditional (general purpose) fiscal transfers from the federal to provincial and local governments increased from $278 million in 1960-61 to an estimated $1,051 million in 1970-71 or by 278 per cent (Table A-7). The corresponding growth in total conditional (special purpose) federal payments to provincial and local governments was from $451 million in 1960-61 to an estimated $2,443 million or by 442 per cent. The percentage split in total federal transfers to provincial and local governments between conditional and unconditional transfers in 1960-61 was 62-38 per cent. As a result of the more rapid growth of conditional transfers, mainly in the early sixties, the corresponding split in 1970-71 was 70-30 per cent.

The total extent of fiscal redistribution among the provinces accomplished by total federal transfer payments has been estimated for 1970 in relation to four measures of fiscal capacity (Table 25). In relation to personal income, declared income over $2,500 and taxable income, the percentages of the total federal transfer payments redistributed from more able (C>1) to less able provinces (C<1) were 20.91, 23.07 and 24.50 respectively. This redistribution consisted of the sum of shares lost by Ontario and British Columbia or the net gain in shares by the other eight provinces. In relation to fiscal capacity as measured by a representative provincial tax system plus local taxation the total extent of fiscal redistribution accomplished by all federal transfer payments to provincial and local governments was 22.66 per cent. This redistribution consisted of the net loss of shares by

Ontario, British Columbia and Alberta or the net gain in shares by the other seven provinces.

While Table 25 illustrates the extent of fiscal redistribution in relation to four alternative measures of fiscal capacity for a given year, 1970, Table 26 illustrates how the extent of fiscal redistribution changed between 1960, 1965 and 1970 in relation to the distribution of one measure of fiscal capacity, taxable income. In addition, total transfers are broken down between conditional and unconditional transfers.

Between 1960 and 1970 there appears to have been a small increase in the total extent of redistribution, from 22.86 per cent of the total federal appropriation in 1960 to 24.50 per cent in 1970. Examination of the breakdown of federal transfers between conditional and unconditional payments reveals a marked difference in the amounts of fiscal redistribution achieved. Predictably, from the discussion in Chapter IV, conditional transfers achieve relatively little redistribution. Their main purposes are to induce recipient governments to spend on specified programs and to provide financial aid proportional to amounts raised or spent by the recipients. In 1960, only 7.92 per cent of federal conditional payments were redistributed from more to less able provinces. By 1965 this proportion had increased to 12.24 per cent and by 1970 had reached an estimated 13.56 per cent. The poorer provinces apparently were better able to take advantage of federal shared-cost programs in 1965 and 1970 than in 1960.

Federal unconditional payments to the provincial and local governments accomplished much higher amounts of fiscal redistribution in each of the three years examined. The reason for this is the fact that a large proportion of federal unconditional transfers to the provinces consist of revenue equalization grants which are not paid to the rich provinces. In 1960 the equalization payment brought each province's per capita yield from the three standard taxes (i.e. the personal income tax, corporation income tax and inheritance tax) up to the weighted average per capita yield of these taxes in the two provinces with the highest per capita yields (i.e. Ontario and British Columbia). By 1965, the equalization base had been modified by the addition to the standard taxes of 50 per cent of a three-year moving average of natural resource revenues, equalized to the average of the top two provinces. By 1970, the equalization formula was based on the 16 provincial revenue sources listed earlier in this chapter in describing the representative provincial tax system measure of fiscal capacity. The federal government brought the yields, at national average rates levied on the actual tax bases for each of the 16 revenue sources, per capita, up to the national average yield, per capita. When the equalization amounts, both negative and positive, for each revenue source were totalled, the three provinces which were not entitled to equalization payments were Ontario, Alberta and British Columbia.

The percentages of the total federal appropriation redistributed relative to the distribution of taxable income in 1960, 1965 and 1970 were 47.12, 45.47 and 49.95 per cent, respectively./ The fact that the amount of fiscal redistribution accomplished by all federal transfers was so much lower, in the range of 22 to 24 per cent, was due to the fact that unconditional transfer payments made up only

30 to 38 per cent of the total and their share of the total has continued to decline over the period examined.

It will also be useful to reduce total federal payments to provincial and local governments to amounts per unit of need. As discussed earlier in this chapter the most appropriate measure of relative need for all services is total population. Total federal transfer payments per capita of population are shown, by province, in Table A-7. For all provinces, they grew from $41 per capita in 1960 to $69 in 1965 and $164 in 1970. Thus, total federal transfer payments to provincial-local governments were four times greater per capita in 1970 than they were in 1960.

ESTIMATED FISCAL REDISTRIBUTION ACCOMPLISHED BY FEDERAL DIRECT AND ESTIMATED INDIRECT CONTRIBUTIONS TO ELEMENTARY AND SECONDARY EDUCATION

It is now proposed to estimate the total extent of fiscal redistribution achieved by direct federal spending for elementary and secondary education and by estimated indirect federal contributions to elementary and secondary education. The basic data on which the calculations were based are shown in Tables A-9 to A-13.

Direct federal spending for education is shown, by province, in Table A-12. Between 1960 and 1970 it increased from $37.8 million to $162.4 million or by 330 per cent. During the same period provincial-local spending for elementary and secondary education increased from $1,193 million to $4,409 million or by 270 per cent. Total government spending for elementary and secondary education increased from

$1,230 million to $4,571 million, or by 272 per cent. In 1970 federal direct spending made up 3.6 per cent of the total compared with 3.1 per cent in 1960.

In addition to direct spending for elementary and secondary education, the federal government contributes indirectly to the financing of elementary and secondary education through the unconditional transfer payments to the provinces. Unlike the federal direct contributions, which have consisted mainly of expenditures for native education and selected conditional or shared-cost contributions, the federal government has no control over how its unconditional transfer payments are spent by the recipient provinces. The amounts paid are added to provincial general revenue and distributed among provincial spending programs according to each province's own spending priorities.

Since they are not earmarked by function, it is not possible to precisely identify how much of total federal unconditional payments into provincial coffers are ultimately spent for each provincial function. The most reasonable assumption in estimating the final disposition of federal unconditional payments is that each dollar of transfer payments is divided among functions in the same manner as each dollar of actual total revenue.[92] This assumption has been made in empirically estimating the federal indirect contribution to the financing of elementary and secondary education at the provincial-local level.

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[92] It must be acknowledged that unconditional federal transfers may produce substitution effects among provincial spending functions, particularly in provinces which receive large shares of total revenue in the form of federal transfers. However, one can only speculate as to how provincial spending patterns might vary by level and source of income. The possible effects of transfer payments on the recipients' spending patterns were discussed in Chapter IV.

Since an essential step in this procedure is the calculation of federal transfers as shares of total provincial-local revenues, it will be useful, at the outset, to examine the relative importance of federal transfer payments in the various provincial revenue structures (Tables A-10 and A-11). In relation to total consolidated provincial-local revenue in all provinces, unconditional federal transfers have remained relatively constant between 1960-61 and 1970-71 (Table A-10). The percentage in 1960-61 was 5.87 per cent and the corresponding percentage in 1970-71 was estimated at 6.08 per cent.

There is, of course, a great deal of interprovincial variation. In 1960-61, the Atlantic Provinces received 24 per cent of their provincial-local consolidated revenue from federal unconditional transfers and the percentages varied from 20 per cent in Nova Scotia and New Brunswick to 36 per cent in Newfoundland. The highest year among the four provinces, for which calculations were made, was 1967-68 when 26 per cent of total revenue in the Atlantic Provinces came from federal unconditional transfers. For 1970-71, it is estimated that the percentage was 22.13 per cent and the percentages, by province, varied from 20 per cent in New Brunswick to 28 per cent in Newfoundland.

As might be expected, the provinces in which federal unconditional transfers were lowest in relation to total provincial-local revenue were Ontario and British Columbia at 0.97 and 0.29 per cent, estimated for 1970-71. The major reasons for the observed variations in the relative importance of federal unconditional transfer payments to the provinces were the broadening of the bases for revenue equalization, discussed above, and a narrowing of interprovincial variations in tax bases, personal income per capita in particular.[93]

At this point, it will also be useful to examine the relative importance of combined federal conditional and unconditional transfers in provincial-local revenue structures (Table A-11). Combined conditional and unconditional transfers to all provinces grew from 15.40 per cent to 20.20 per cent (estimated) of consolidated provincial-local revenue between 1960-61 and 1970-71. Most of this growth has been due to the more rapid expansion of conditional transfers noted earlier in this chapter.

Federal conditional and unconditional transfers have constituted a larger share of provincial-local revenues in the Atlantic Region than in any other Province or Region. In 1970-71 the percentage for all four Atlantic Provinces was 49 per cent and varied, by province, from 42 per cent in Nova Scotia to 60 per cent in both Newfoundland and Prince Edward Island. British Columbia and Ontario received the lowest percentages of total provincial-local revenue in the form of federal transfers in 1970-71, estimated at 13 per cent and 14 per cent respectively. The corresponding percentages for Quebec and the Prairie Region were 23 per cent and 21 per cent respectively.

The relative importance of federal direct spending for elementary and secondary education is documented in Table A-12 and was discussed earlier. Table A-13 documents federal direct spending and the estimated indirect federal contribution to elementary and secondary education. As explained earlier and noted in the footnote to Table A-13, the latter estimates were based on the assumption that federal unconditional transfer payments have a simple income effect on provincial-local spending for elementary and secondary education and do not alter provincial-local spending priorities. In other words, it is assumed in these exercises that the response of the recipient governments to the additional federal payments is neutral with respect to the patterns of spending by function.

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[93] For example, the coefficient of dispersion of personal income per capita among the ten provinces declined from 25.7 per cent to 21.5 per cent between 1960 and 1970 (See Table 16, Columns 1 to 3).

Based on this assumption, the estimated federal indirect contributions to elementary and secondary education (i.e. the amounts from federal unconditional transfers which were spent for elementary and secondary education at the provincial-local level) were $66 million in 1960, $106 million in 1965 and $251 million in 1970. These amounts represented the following shares of total unconditional federal transfer payments to provincial and local governments in those years: 23.7, 25.2 and 23.8 per cent respectively. The estimated indirect contributions, combined with actual direct federal spending resulted in an estimated total federal contribution to elementary and secondary education of $104 million in 1960, $228 million in 1965 and $413 million in 1970. As shares of total direct spending of all governments for elementary and secondary education in these three years, the estimated total federal contribution made up 8.42, 10.15 and 9.0 per cent, respectively. The divisions in the total federal contribution between direct spending and the estimated indirect contribution were 36-64 in 1960, 54-46 in 1965 and 39-61 per cent in 1970.

A major factor in the unusually high direct component in 1965 was conditional grants under the Technical Vocational Training Assistance Act which had not been implemented in 1960 and had been largely phased out by 1970.

Predictably, there is wide variation among provinces in the importance of the federal direct and estimated indirect contribution relative to total spending for elementary and secondary education. In 1970, for example, the estimated federal shares of total government spending for elementary and secondary education and the relative shares of direct spending versus indirect contributions in the federal shares were as follows:

	Federal Contribution as Percentages of Total Spending	Shares of Federal Contribution	
		Direct	Indirect
Newfoundland	28.2%	1.2%	98.8%
Prince Edward Island	29.5	11.0	89.0
Nova Scotia	24.0	23.7	76.3
New Brunswick	26.8	33.5	66.5
ATLANTIC REGION	26.0	21.7	78.3
Quebec	15.8	31.8	68.2
Ontario	2.5	62.0	38.0
Manitoba	12.7	50.7	49.3
Saskatchewan	13.5	55.6	44.4
Alberta	5.1	68.9	31.1
PRAIRIE REGION	9.1	57.4	42.6
British Columbia	3.3	91.6	8.4
TOTAL	9.0	39.3	60.7

It is now proposed to discuss the total amount or extent of fiscal redistribution achieved by federal direct spending and the estimated federal indirect contribution to elementary and secondary education. Calculations have been made in relation to the four alternative measures of provincial-local fiscal capacity presented earlier in this chapter and are shown for 1970 in Table 27. The bottom row of figures shows that the net redistribution from rich to poor provinces (i.e. from provinces with C>1 to provinces with C<1) varied within a narrow range from 38.53 to 42.70 per cent depending on the measure of fiscal capacity used. It is interesting to note that the total extent of redistribution accomplished by the estimated total federal contribution to elementary and secondary education was nearly double that achieved by total federal transfer payments shown in Table 25 and discussed above (i.e. between 20.91 and 24.50 per cent). This is due, in part, to the greater importance of unconditional as opposed to conditional transfers in the total federal contribution to elementary and secondary education than in total federal transfer payments in general. It will be recalled, for example, that 50 per cent of total unconditional transfers were redistributed in 1970 compared to only 14 per cent of total conditional transfers (Table 26). Another factor accounting for the greater amount of redistribution achieved by federal contributions to elementary and secondary education was Quebec's greater participation in these transfers than in total federal conditional and unconditional transfer payments.

While Table 27 compares the extent of fiscal redistribution achieved in one year, 1970, using four alternative measures of fiscal capacity, Table 28 compares the extent of redistribution achieved by federal direct and indirect contributions to education in three different years, 1960, 1965 and 1970, using one measure of fiscal capacity, taxable income. In addition, Table 28 compares the extent of fiscal redistribution achieved by direct federal spending with that achieved by the estimated indirect federal contribution to the financing of elementary and secondary education.

The extent of fiscal redistribution varied considerably from 35.30 per cent of the total federal appropriation in 1960 to 25.80 per cent in 1965 and up again to 42.12 per cent in 1970. The major reason for the greater fiscal redistribution in 1970 than in 1965 was the fact that a larger share of the estimated total federal contribution in 1970 consisted of indirect assistance than in 1965, coupled with a fuller participation by Quebec. For example, in 1960 Quebec residents accounted for 22 per cent of the taxable income in Canada but only received 12 per cent of direct federal spending for elementary and secondary education. By 1970, however, when Quebec accounted for 24 per cent of taxable income, she received 39.90 per cent of federal direct spending for elementary and secondary education (Tables A-6 and A-14). Also, in 1960 Quebec received only 30.28 per cent of the total estimated indirect federal contribution to provincial-local spending for elementary and secondary education but by 1970 she received 55.39 per cent.

As might be expected, the total fiscal redistribution achieved by the federal indirect contribution to financing elementary and secondary education among the provinces was greater than that achieved by federal direct spending. For example the net redistribution from more to less able provinces resulting from the estimated indirect contribution in 1970 was 49.02 per cent compared with 31.45 per cent for direct federal spending on elementary and secondary education. It is interesting to note, however, that there has been a marked increase in the extent of fiscal redistribution achieved by federal direct spending from 15.73 per cent in 1960 to an estimated 30.44 per cent in 1970, whereas that resulting from the estimated indirect contribution to provincial-local spending increased only from 46.54 to 49.02 per cent.

It will be recalled that the analysis of hypothetical allotment alternatives developed earlier in this chapter began with the calculation of allotment ratios (A1, A2 and A3) which were then used to determine provincial shares of a total federal appropriation and, ultimately, the amounts of fiscal redistribution which could be achieved. In the present attempt to determine the redistributive impact of actual federal direct spending and estimated indirect contributions to provincial-local spending for elementary and secondary education, the opposite approach is necessary, that is to say, since the amounts of federal appropriation were either given or calculated on the basis of stated assumptions, provincial shares and the extent of fiscal redistribution based on the four alternative measures of fiscal capacity were calculated and discussed first. Now, it is proposed to calculate the allotment ratios per unit of need (i.e. values of A) based on direct federal spending and the estimated federal indirect contribution and then compare the resulting ratios for 1970 with the 1970 values based on the mathematical functions examined earlier.

The actual amounts of federal direct spending and of estimated federal indirect contribution to elementary and secondary education received by each province per child of school age in 1960, 1965 and 1970 are shown in Table 29. One notable feature of Table 29 has been the extent of increase in federal direct and indirect assistance per weighted child. For all ten provinces, federal direct spending for elementary and secondary education increased from $6.51 per child in 1960 to $21.14 or by 225 per cent while the estimated indirect contribution increased from $11.33 per child to $32.62 or by 188 per cent. The estimated total federal contribution increased from $17.84 per child in 1960 to $53.75 in 1970 or by 201 per cent.

The data in Table 29 have been used in Table 30 to calculate the allotment ratios or indexes based on the national averages of federal assistance per child. Not only does this exercise facilitate comparisons of changes in provincial shares over time, but more important for present purposes, it permits comparison with the alternative ratios shown in Table 19 (Ao, A1, A2 and A3). Historically, the most important trend in these ratios has been the dramatic rise in Quebec's relative share per unit of need both in terms of direct and indirect federal contribution to elementary and secondary education.

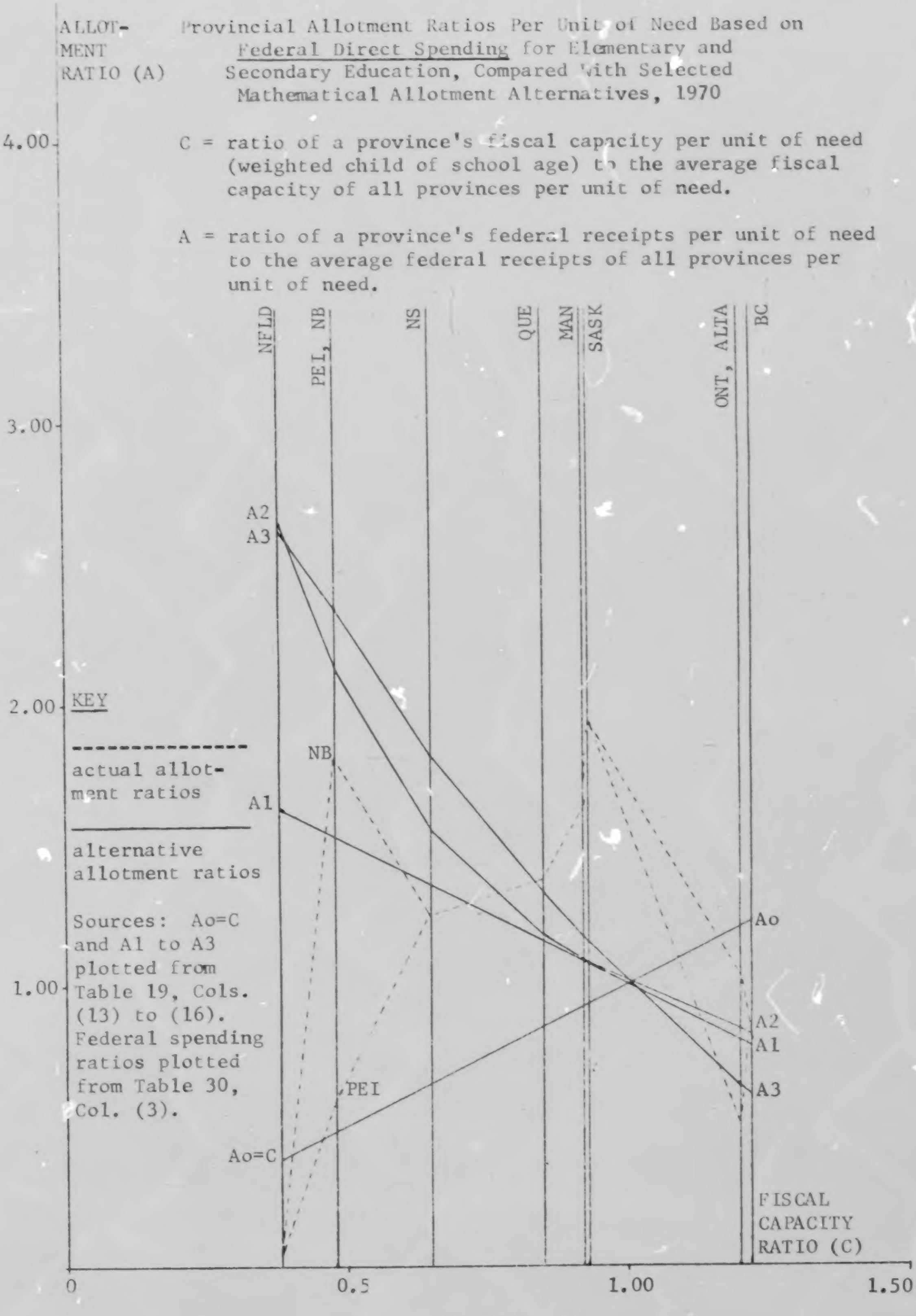
Our objective is to compare the three sets of allotment ratios corresponding to the federal direct, estimated indirect and total contributions to elementary and secondary education in 1970 shown in Table 30 with the hypothetical allotment alternatives for 1970 examined earlier. For this purpose, it will be sufficient to use the yields of a representative provincial tax system in 1970 plus local taxation as the measure of fiscal capacity. This measure was chosen over the other three because the provincial tax system component is the measure of fiscal capacity actually being used as the basis for federal-provincial revenue equalization in Canada and also because there is a greater dispersion of fiscal capacity ratios based on this measure than on two of the other three measures examined earlier.

Figures 2, 3 and 4 show the allotment ratios for federal direct spending, estimated federal indirect contributions to provincial-municipal spending for elementary and secondary education and for the estimated total federal contribution, respectively. Each of these three sets of values or functions is compared with one or more of the hypothetical allotment functions. Also plotted in each figure is the function Ao = C which represents no fiscal redistribution. All of the hypothetical allotment ratios (A1, A2, A3 and Ao) have been plotted from data shown in Table 19, Columns 13 to 16.

Provincial allotment ratios based on direct federal spending for elementary and secondary education, plotted in Figure 2, follow an erratic pattern with little internal consistency or relationship to the plotted functions A1, A2 and A3. In fact, there is less reason for federal direct spending per child in each province to follow a consistent pattern than for indirect financial assistance, examined below. A large proportion of federal direct spending is for native and armed forces education and the need for this type of education (i.e. numbers of native and armed forces personnel children) is not necessarily distributed among provinces in direct relation to school age population. It is, nevertheless, worthwhile to examine the distribution of actual allotment values and to compare them with the hypothetical functions. All three provinces with greater fiscal capacity per child than the national average (i.e. C>1), Ontario, Alberta and British Columbia, received less federal direct spending per child than they would have received if no fiscal redistribution had been attempted. It is this fact which resulted in 28.60 per cent of total federal direct spending

FIGURE 2

Provincial Allotment Ratios Per Unit of Need Based on Federal Direct Spending for Elementary and Secondary Education, Compared With Selected Mathematical Allotment Alternatives, 1970



C = ratio of a province's fiscal capacity per unit of need (weighted child of school age) to the average fiscal capacity of all provinces per unit of need.

A = ratio of a province's federal receipts per unit of need to the average federal receipts of all provinces per unit of need.

Sources: Ao=C and A1 to A3 plotted from Table 19, Cols. (13) to (16). Federal spending ratios plotted from Table 30, Col. (3).

for elementary and secondary education in 1970 being redistributed in relation to fiscal capacity as measured by the yield of a representative provincial tax system plus local taxation.[94]

Quebec, Manitoba and Saskatchewan clearly received more in 1970 per child relative to the national average receipt per child, than they would have received if the funds had been distributed according to any of the three allotment alternatives. However, all Atlantic Provinces except New Brunswick received less in direct federal spending in 1970 than they would have received under any of the allotment alternatives. Newfoundland, alone among the less able provinces, received less than it would have received if the estimated federal contribution to elementary and secondary education in 1970 had been distributed so as to achieve no fiscal redistribution (i.e. Ac = C).

Provincial allotment ratios based on estimated indirect federal contributions to provincial-local spending for elementary and secondary education are shown in Figure 3 together with the plotted functions Ao and A3. Of the three mathematical allotment alternatives, only A3 is shown because it provides the closest "fit" to the pattern of actual allotment ratios. A lower constant (K) of lower value than .5 would provide a still better "fit". It is immediately apparent that the "curve" of the actual allotment function is steeper throughout most of the range of values of C than A3 and would, therefore, result in a higher degree of fiscal redistribution than that embodied in A3; that is to say, the actual allotment ratios would, through most intervals,

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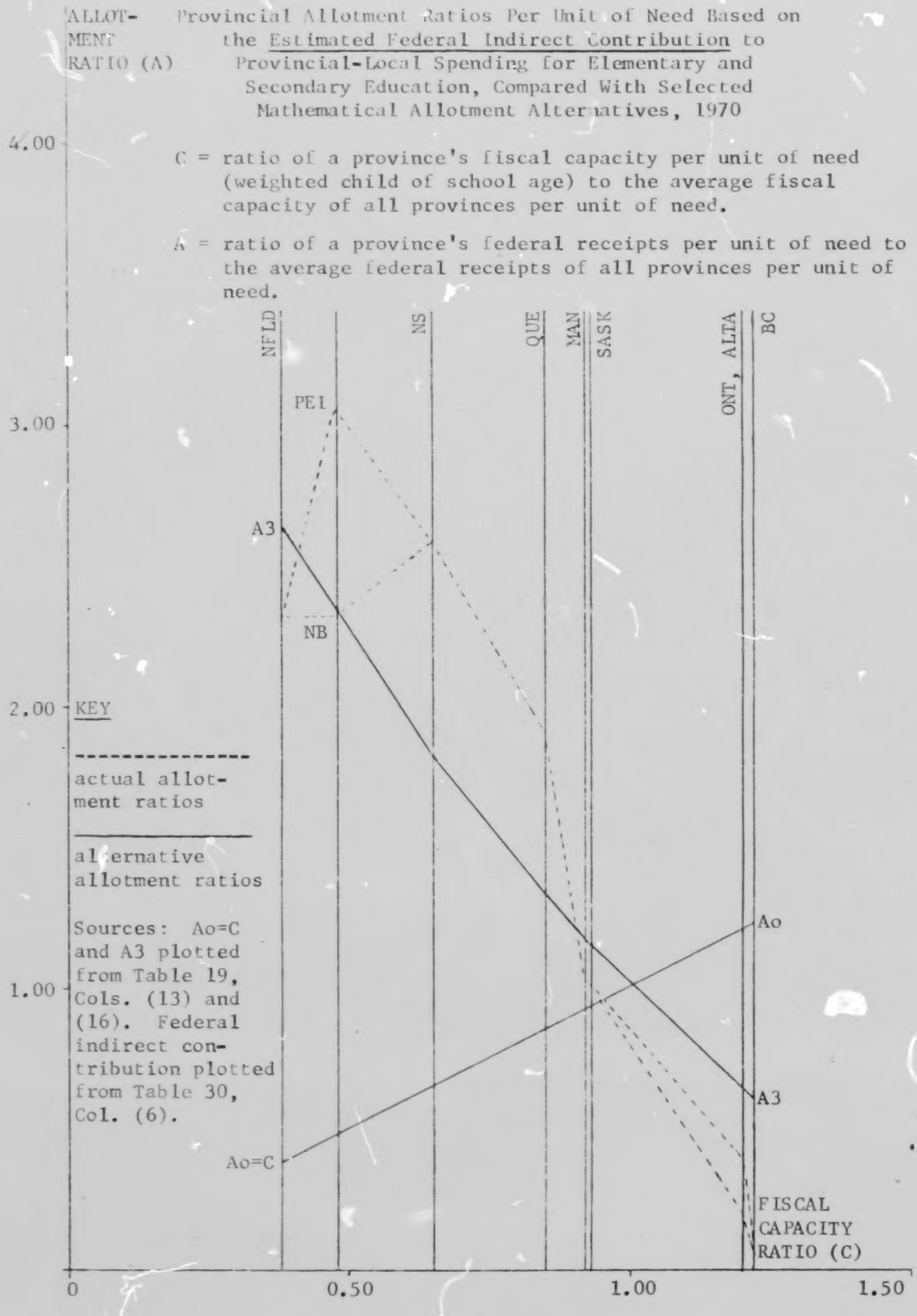
[94] The figure quoted was calculated from Table 27, Col. (4) and Table A-14, Col. (3).

FIGURE 3

Provincial Allotment Ratios Per Unit of Need Based on the Estimated Federal Indirect Contribution to Provincial-Local Spending for Elementary and Secondary Education, Compared With Selected Mathematical Allotment Alternatives, 1970



C = ratio of a province's fiscal capacity per unit of need (weighted child of school age) to the average fiscal capacity of all provinces per unit of need.

A = ratio of a province's federal receipts per unit of need to the average federal receipts of all provinces per unit of need.

KEY

---------------- actual allotment ratios

———————— alternative allotment ratios

Sources: Ao=C and A3 plotted from Table 19, Cols. (13) and (16). Federal indirect contribution plotted from Table 30, Col. (6).

decline more for a given increase in fiscal capacity ratio than would the allotment function under A3.

Ontario, Alberta and British Columbia received relatively less indirect federal assistance per child than they would have received under allotment formula A3. This is borne out by the fact that allotment function A3 would have resulted in total fiscal redistribution among the provinces equal to 30.53 per cent of a federal appropriation compared to 51.83 per cent which is the total amount of fiscal redistribution achieved by the federal indirect contribution in relation to the distribution of the present measure of fiscal capacity (i.e. yield of a representative provincial tax system plus actual local taxation).[95]

Among provinces below the national average of fiscal capacity per child Newfoundland, New Brunswick, Manitoba and Saskatchewan received less indirect federal assistance for elementary and secondary education per child than they would have received under allotment formula A3 but Prince Edward Island, Nova Scotia and Quebec all received substantially more.

In Figure 4, allotment ratios based on the combined federal direct and estimated indirect contribution to elementary and secondary education have been plotted, together with allotment function A3. Through much of its length the curve traced by the actual provincial allotment ratios is steeper than A3. Ontario, Alberta and B.C. have lower ratios than would prevail under A3 while Nova Scotia, Quebec, Manitoba and Saskatchewan have higher ratios. This pattern of allotment

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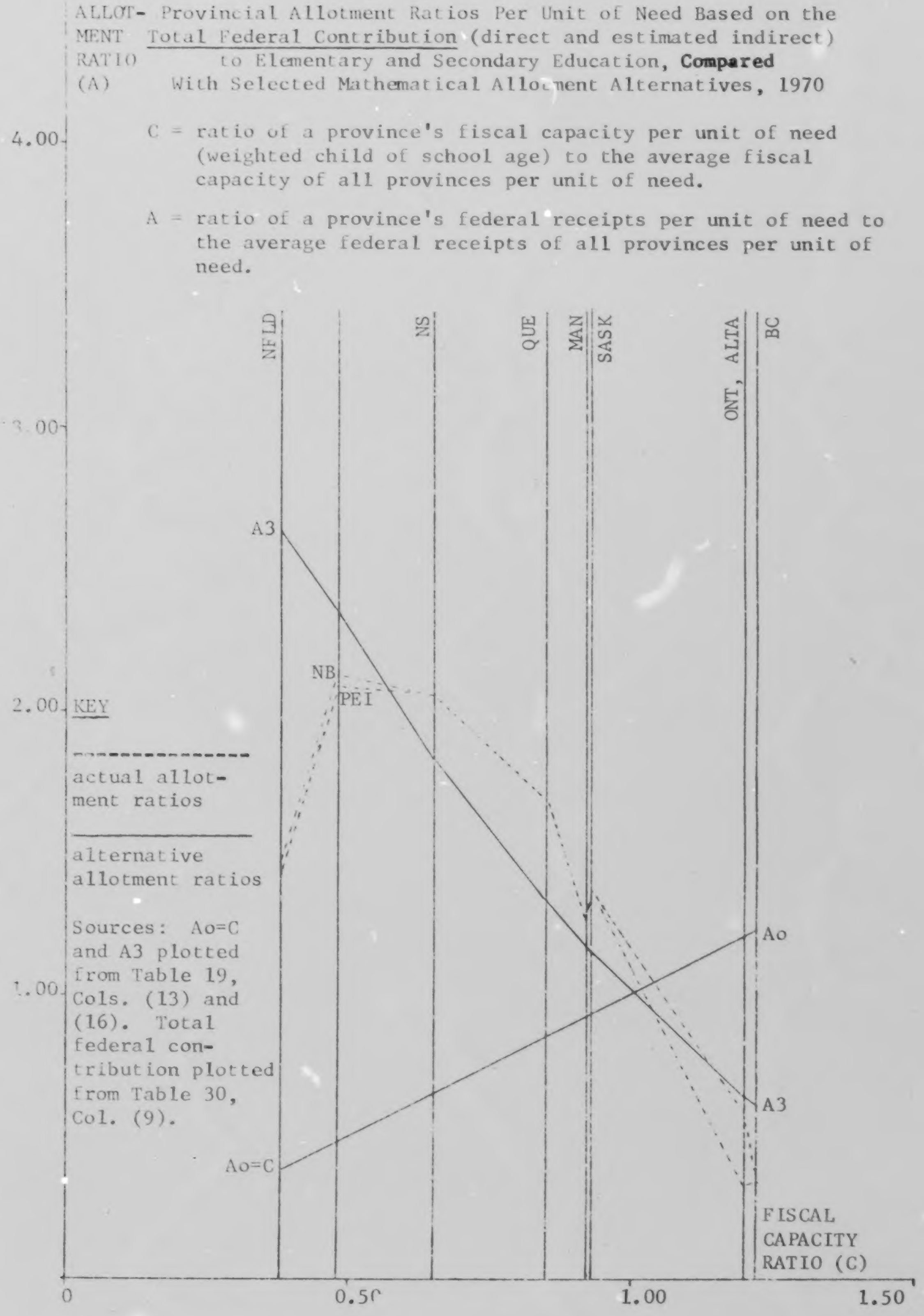
[95] The first figure quoted is from Table 24, Col. (7). The second figure was calculated from Table 27, Col. (4) and Table A-14, Col. (6).

FIGURE 4

Provincial Allotment Ratios Per Unit of Need Based on the Total Federal Contribution (direct and estimated indirect) to Elementary and Secondary Education, **Compared** With Selected Mathematical Allotment Alternatives, 1970



C = ratio of a province's fiscal capacity per unit of need (weighted child of school age) to the average fiscal capacity of all provinces per unit of need.

A = ratio of a province's federal receipts per unit of need to the average federal receipts of all provinces per unit of need.

Sources: Ao=C and A3 plotted from Table 19, Cols. (13) and (16). Total federal contribution plotted from Table 30, Col. (9).

ratios is consistent with the earlier finding that the total federal direct and indirect assistance to elementary and secondary education resulted in more fiscal redistribution than would have occurred under A3, based on the same measure of fiscal capacity. The actual pattern of allotment ratios and provincial shares resulted in 42.70 per cent of the total federal contribution or appropriation in 1970 being redistributed to provinces with less than the national average of fiscal capacity per child (Table 27, Col. 9). This compares to the 30.53 per cent redistribution which would have occurred if the same total funds had been distributed among the provinces using the function A3, the mathematical allotment formula which provided the largest amount of fiscal redistribution among the three examined (Table 24, Col. 7).

Unfortunately, however, the three provinces having the lowest fiscal capacity per child, as measured by the yield of a representative provincial tax system plus local taxation, had lower actual allotment ratios in 1970 than they would have had under A3. This is illustrated in Figure 4 by the fact that the plotted ratios for Newfoundland, New Brunswick and Prince Edward Island fell sharply below the curve representing A3. A major reason for this situation is the fact that educational needs of Newfoundland, in particular, and of New Brunswick to some extent, are relatively higher than in the other provinces. This factor helped to lower the relative amounts of federal assistance per child (Table 29) and, therefore, the allotment ratios shown.

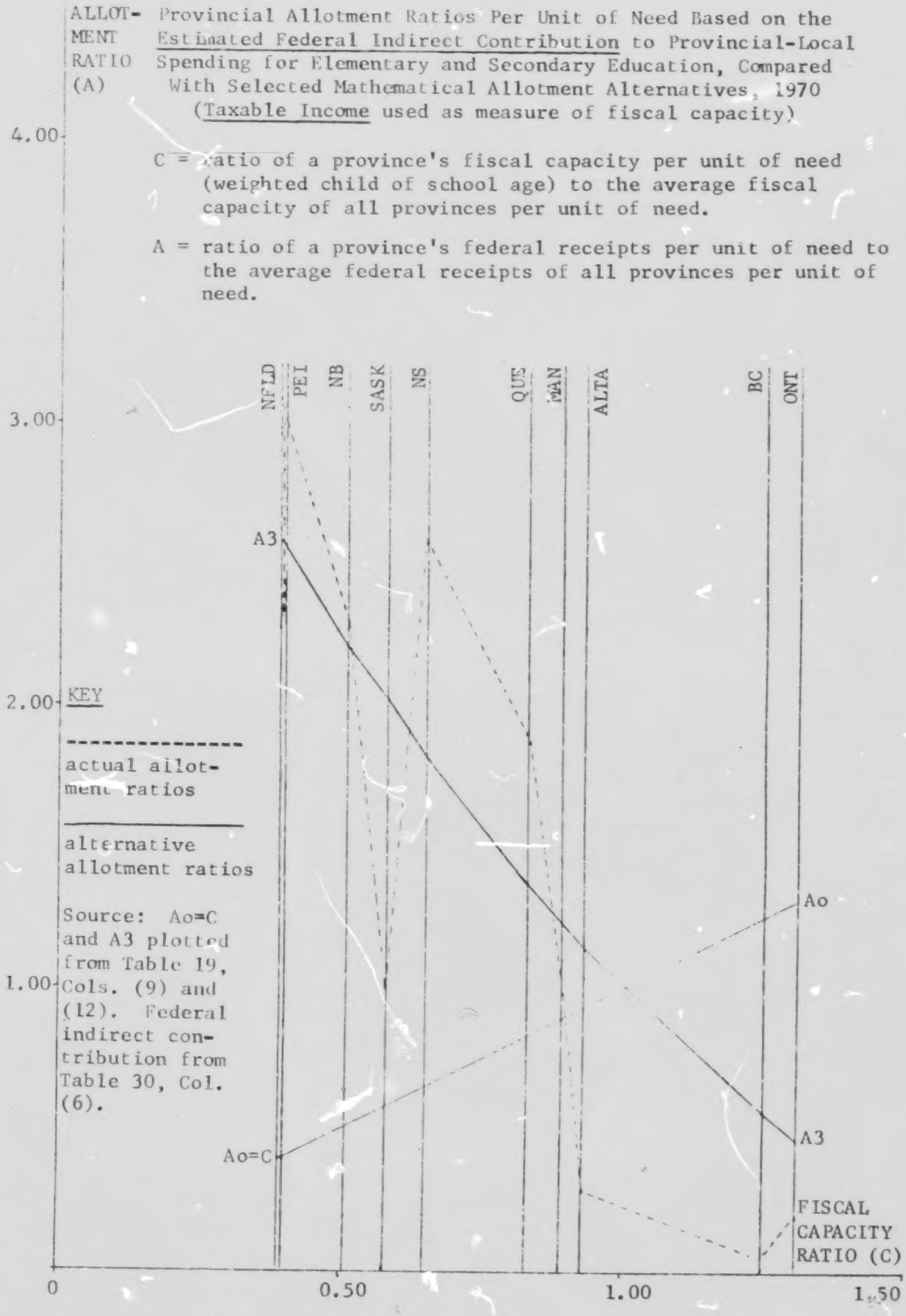
The allotment ratios shown in Figures 2, 3 and 4 were all plotted in relation to one set of fiscal capacity ratios based on the yield of a representative tax system. It must be recognized that the patterns of allotment ratios may be quite different when plotted in relation to one of the other sets of fiscal capacity ratios. It has been stressed several times that the measure of fiscal capacity chosen is of critical importance to the redistributive effects of allotment formulas for distributing intergovernmental transfer payments. It will be useful, therefore, to graph one set of allotment ratios in relation to a different set of fiscal capacity ratios.

In Figure 5, provincial allotment ratios based on the estimated federal indirect contribution to elementary and secondary education have been plotted against fiscal capacity ratios based on taxable income. The resulting pattern of allotment ratios is much less systematic than that obtained in Figure 3 when the same set of ratios was plotted against fiscal capacity ratios based on the yield of a representative provincial tax system plus local tax revenues. This is not surprising since a large proportion of the unearmarked transfer payments to the provinces from which the federal indirect assistance to education was derived, consisted of revenue equalization grants which were distributed in inverse relation to fiscal capacity as measured by the yield of a similar representative provincial tax system. One provincial allotment ratio which contributed to this result is that for Saskatchewan. Based on a representative tax system plus local taxation per child, Saskatchewan's fiscal capacity ratio was 0.93; but based on taxable income per child it was only 0.58 (Table 19, Cols. 13 and 9). Saskatchewan's mineral wealth results in a considerably higher fiscal capacity ratio under a representative tax system than its mainly agricultural economy provides under the taxable income approach. A similar but less pronounced situation also results in Alberta's allotment ratio being much more "out of line" when plotted in relation to

200

FIGURE 5

Provincial Allotment Ratios Per Unit of Need Based on the Estimated Federal Indirect Contribution to Provincial-Local Spending for Elementary and Secondary Education, Compared With Selected Mathematical Allotment Alternatives, 1970
(Taxable Income used as measure of fiscal capacity)



C = ratio of a province's fiscal capacity per unit of need (weighted child of school age) to the average fiscal capacity of all provinces per unit of need.

A = ratio of a province's federal receipts per unit of need to the average federal receipts of all provinces per unit of need.

KEY

---------------- actual allotment ratios

———————— alternative allotment ratios

Source: Ao=C and A3 plotted from Table 19, Cols. (9) and (12). Federal indirect contribution from Table 30, Col. (6).

taxable income than to a representative provincial tax system. Despite these anomolies, the net amount of fiscal redistribution achieved by estimated federal indirect contributions to the financing of elementary and secondary education are relatively high in relation to taxable income, 49.02 per cent (Table 28, Col. 6) compared with the amount which would have been achieved using the most redistributive mathematical function examined, A3, 36.65 per cent (Table 23, Col. 7).

TABLE 15

ESTIMATES OF RELATIVE EDUCATIONAL NEEDS IN CANADA--INDEXES BY PROVINCE, 1960, 1965 AND 1970
(NATIONAL AVERAGE = 100.0)

Province	Live Births As Percentages of 5-year-old population[a]			Weighted School-Age Children (5 to 19) Per 1000 of								
				Population			Labour Force			Tax Returns Over $2500[b]		
	1961	1966	1971	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Newfoundland	108.6	123.8	106.6	124.9	123.9	119.1	..	..	164.1	277.9	190.7	198.0
Prince Edward Island	105.5	98.3	107.3	112.3	108.8	106.9	..	..	125.5	307.5	185.9	175.3
Nova Scotia	101.5	103.8	103.1	107.1	106.0	101.7	..	..	120.2	158.5	117.4	125.0
New Brunswick	98.6	101.3	104.9	118.5	116.5	110.8	..	..	128.8	199.7	138.7	247.4
ATLANTIC REGION	102.8	108.4	104.9	115.1	113.9	109.1	140.4	133.4	133.4	199.3	141.8	149.7
Quebec	96.4	97.2	88.3	107.7	104.8	103.0	110.3	107.3	105.0	129.0	91.2	112.5
Ontario	101.7	99.9	103.1	92.0	94.0	95.9	85.0	88.9	91.3	73.0	60.8	83.0
Manitoba	100.9	100.7	109.5	97.5	97.2	97.5	..	..	99.6	100.6	94.7	102.6
Saskatchewan	98.9	103.8	100.7	102.5	102.3	103.3	..	..	109.8	135.1	110.5	138.4
Alberta	105.0	100.4	108.2	99.1	100.9	103.6	..	..	100.2	101.2	97.3	106.8
PRAIRIE REGION	102.2	101.5	106.6	99.7	100.3	101.7	100.0	100.0	102.5	109.3	100.0	112.6
British Columbia	97.8	96.6	106.2	89.8	92.6	93.4	91.6	91.0	89.2	74.2	68.3	85.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 15 (continued)

Province	Live Births As Percentages of 5-year-old population[a]			Weighted School-Age Children (5 to 19) Per 1000 of								
				Population			Labour Force			Tax Returns Over $2500[b]		
	1961	1966	1971	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ACTUAL WEIGHTED AVERAGE	110.9%	82.6%	45.3%	325	352	362	905	967	917	1548	1789	1174
INDEX OF DISPERSION (%)[c]	3.7	7.3	9.3	10.7	9.3	7.3	20.6	17.2	16.9	52.7	38.4	38.9

[a] Population by single years of age are available for Census years only. Hence data are shown for 1961, 1966 and 1971 instead of 1960, 1965 and 1970.

[b] To obtain approximately equivalent purchasing in earlier years, $2500 in 1970 was deflated using the Consumer Price Index. Thus, the calculations for 1960 and 1965 were based on tax returns over $1946 and $2070, respectively.

[c] The index of dispersion used in this and subsequent tables is the coefficient of variation which is the standard deviation divided by the arithmetic mean, expressed as a percentage. The percentages shown relate to the dispersion of the actual values shown in Appendix A.

Source: Derived from Appendix Table A-1.

TABLE 16

THREE MEASURES OF RELATIVE FISCAL CAPACITY--INDEXES BY PROVINCE, 1960, 1965 AND 1970
(NATIONAL AVERAGE = 100.0)

Province	Based On Personal Income Per Capita			Based On Total Declared Income Over $2500[a] Per Capita			Based On Taxable Income Per Capita		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	55.7	59.3	63.9	..	46.2	51.9	37.7	39.6	46.5
Prince Edward Island	57.0	60.2	66.7	..	39.3	47.2	29.2	35.2	43.0
Nova Scotia	76.5	74.8	78.0	..	63.0	71.0	55.5	56.6	66.3
New Brunswick	68.2	68.6	72.4	..	57.5	62.6	46.8	51.0	57.0
ATLANTIC REGION	67.8	68.2	72.1		55.8	62.3	47.0	49.4	57.1
Quebec	87.3	90.1	89.1	..	87.7	87.9	77.8	84.2	85.4
Ontario	118.0	116.7	118.2	..	124.3	122.5	134.2	128.9	126.0
Manitoba	99.6	93.7	93.0	..	85.8	88.6	91.7	82.5	87.1
Saskatchewan	89.4	90.2	72.3	..	79.0	64.1	67.8	75.1	60.1
Alberta	100.0	97.2	99.8	..	89.9	96.3	98.2	89.6	96.4
PRAIRIE REGION	96.8	94.3	90.6		85.6	85.5	87.4	83.5	84.1
British Columbia	115.5	113.9	108.2	..	122.9	114.3	128.3	127.0	116.3
TOTAL	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0

TABLE 16 (continued)

Province	Based On Personal Income Per Capita 1960	1965	1970	Based On Total Declared Income Over $2500[a] Per Capita 1960	1965	1970	Based On Taxable Income Per Capita 1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ACTUAL NATIONAL AVERAGE ($)	1653	2087	3122	..	1378	2206	541	836	1571
INDEX OF DISPERSION (%)	25.7	23.6	21.5	..	59.0	31.7	47.3	42.6	36.5

[a] See footnote b to Table 15.

Source: Derived from Appendix Table A-2.

TABLE 17

THREE MEASURES OF RELATIVE ABILITY TO FINANCE EDUCATIONAL NEEDS
IN CANADA--INDEXES BY PROVINCE 1960, 1965 AND 1970
(NATIONAL AVERAGE = 100.0)

Province	Based on Dollars Per Weighted School-Age Child (5 to 19) of								
	Personal Income			Total Declared Income Over $2500[a]			Taxable Income		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	44.6	47.9	53.7	..	37.3	42.7	30.2	32.0	39.0
Prince Edward Island	50.8	55.5	62.3	..	36.2	44.0	26.1	32.4	40.1
Nova Scotia	71.6	70.7	76.7	..	59.5	69.8	51.7	53.5	65.1
New Brunswick	57.7	59.0	65.3	..	49.5	56.4	39.5	43.8	51.4
ATLANTIC REGION	58.9	60.0	66.0		49.1	57.0	40.8	43.5	52.3
Quebec	81.2	85.9	86.5	..	83.6	85.2	72.3	80.4	82.8
Ontario	128.4	124.3	123.2	..	132.3	127.6	145.8	137.3	131.3
Manitoba	102.1	96.7	95.3	..	88.3	90.8	93.9	84.9	89.3
Saskatchewan	87.3	88.3	69.8	..	77.2	61.9	66.2	73.5	58.0
Alberta	100.9	96.5	96.3	..	89.2	92.9	99.0	89.0	93.0
PRAIRIE REGIONS	97.2	94.2	88.9		85.5	83.9	87.6	83.4	82.5
British Columbia	128.6	123.0	115.8	..	132.6	122.4	142.8	137.3	124.5
TOTAL	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0

TABLE 17 (continued)

Province	Based on Dollars Per Weighted School-Age Child (5 to 19) of: Personal Income 1960	Personal Income 1965	Personal Income 1970	Total Declared Income Over $2500[a] 1960	Total Declared Income Over $2500[a] 1965	Total Declared Income Over $2500[a] 1970	Taxable Income 1960	Taxable Income 1965	Taxable Income 1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ACTUAL WEIGHTED AVERAGE ($)	5079	5923	8634		3912	6101	1664	2372	4345
INDEX OF DISPERSION (%)	35.1	31.4	27.4		44.0	37.6	56.3	50.0	42.2

[a] See footnote b to Table 15.

Source: Derived from Appendix Table A-3.

TABLE 18

(A) RELATIVE FISCAL CAPACITIES OF THE PROVINCES AND (B) RELATIVE ABILITIES TO FINANCE EDUCATION BASED ON THE YIELDS OF A REPRESENTATIVE TAX SYSTEM[a] PLUS LOCAL TAXATION--INDEXES BY PROVINCE, 1967 AND 1970 (NATIONAL AVERAGE = 100.0)

Province	A. Based on Fiscal Capacity (Per Capita)		B. Based on Ability to Finance Education (Per Weighted School-Age Child)	
	1967	1970	1967	1970
	(1)	(2)	(3)	(4)
Newfoundland	40.1	45.1	33.4	37.9
Prince Edward Island	52.2	50.4	48.2	47.1
Nova Scotia	63.0	66.1	60.3	65.0
New Brunswick	46.9	52.3	41.7	47.2
ATLANTIC REGION	51.7	55.6	46.4	51.0
Quebec	88.0	87.1	84.6	84.6
Ontario	113.7	114.9	119.9	119.7
Manitoba	85.6	93.5	87.0	91.7
Saskatchewan	100.2	92.2	98.1	93.1
Alberta	131.5	124.4	128.5	120.0
PRAIRIE REGION	109.6	107.2	108.6	105.1
British Columbia	117.3	113.7	125.9	121.7
TOTAL	100.0	100.0	100.0	100.0
ACTUAL WEIGHTED AVERAGE ($)	416	599	1157	1656
INDEX OF DISPERSION (%)	38.3	34.6	43.0	38.9

[a] Consists of the yield of 16 provincial revenue sources when national average rates are applied to provincial bases.

Source: Derived from Appendix Table A-4.

TABLE 19

PROVINCIAL ALLOTMENT RATIOS PER UNIT OF EDUCATIONAL NEED (I.E. PER WEIGHTED CHILD AGED 5 TO 19): EXAMPLES USING THREE ALTERNATIVE ALLOTMENT FORMULAS AND FOUR MEASURES OF RELATIVE ABILITY TO FINANCE EDUCATION, 1970
(NATIONAL AVERAGE = 1.00)

Province	Personal Income				Total Declared Income Over $2500			
	Ao=C	A1	A2	A3	Ao=C	A1	A2	A3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Newfoundland	0.54	1.46	1.86	2.14	0.43	1.57	2.34	2.48
Prince Edward Island	0.62	1.38	1.61	1.90	0.44	1.56	2.27	2.43
Nova Scotia	0.77	1.23	1.30	1.52	0.70	1.30	1.43	1.70
New Brunswick	0.65	1.35	1.53	1.82	0.56	1.44	1.78	2.06
Quebec	0.87	1.14	1.16	1.29	0.85	1.15	1.17	1.32
Ontario	1.23	0.77	0.81	0.59	1.28	0.72	0.78	0.52
Manitoba	0.95	1.05	1.05	1.10	0.91	1.09	1.10	1.19
Saskatchewan	0.70	1.30	1.43	1.70	0.62	1.38	1.62	1.91
Alberta	0.96	1.04	1.04	1.08	0.93	1.07	1.08	1.15
British Columbia	1.16	0.84	0.86	0.71	1.22	0.78	0.82	0.60
National Average	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

TABLE 19 (continued)

Province	Taxable Income				Yield of a Representative Provincial Tax System Plus Local Taxation			
	Ao=C	A1	A2	A3	Ao=C	A1	A2	A3
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Newfoundland	0.39	1.61	2.56	2.59	0.38	1.62	2.64	2.63
Prince Edward Island	0.40	1.60	2.49	2.56	0.47	1.53	2.12	2.34
Nova Scotia	0.65	1.35	1.54	1.82	0.65	1.35	1.54	1.82
New Brunswick	0.51	1.49	1.95	2.21	0.47	1.53	2.12	2.34
Quebec	0.83	1.17	1.21	1.37	0.85	1.15	1.18	1.33
Ontario	1.31	0.69	0.76	0.47	1.20	0.80	0.84	0.64
Manitoba	0.89	1.11	1.12	1.22	0.92	1.08	1.09	1.17
Saskatchewan	0.58	1.42	1.72	2.02	0.93	1.07	1.07	1.14
Alberta	0.93	1.07	1.08	1.14	1.20	0.80	0.83	0.64
British Columbia	1.25	0.76	0.80	0.57	1.22	0.78	0.82	0.61
National Average	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Note: C = ratio of a province's fiscal capacity per unit of need to the average fiscal capacity per unit of need of all provinces.
A = ratio of a province's federal receipts per unit of need to the average federal receipts per unit of need for all provinces. It follows that where A = C there is no fiscal redistribution among the provinces (Ao).

Source: Derived from Appendix Table A-5.

TABLE 20

DEGREE OF REDISTRIBUTION AMONG PROVINCES PER UNIT OF EDUCATIONAL NEED (I.E. PER WEIGHTED CHILD AGED 5 TO 19) USING THREE MATHEMATICAL FORMS OF REDISTRIBUTIVE ALLOTMENT FORMULA APPLIED TO FOUR MEASURES OF RELATIVE ABILITY TO FINANCE EDUCATION, 1970

Province	Based on Dollars Per Weighted School-Age Child (5 to 19) of											
	Personal Income			Total Declared Income Over $2500			Taxable Income			Yield of A Representative Provincial Tax System Plus Local Taxation		
	$\Delta A1$	$\Delta A2$	$\Delta A3$	$\Delta A1$	$\Delta A2$	$\Delta A3$	$\Delta A1$	$\Delta A2$	$\Delta A3$	$\Delta A1$	$\Delta A2$	$\Delta A3$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Newfoundland	-.5	-3.467	-0.732	-.5	-5.485	-0.619	-.5	-6.575	-0.648	-.5	-6.964	-0.657
Prince Edward Island	-.5	-2.577	-0.689	-.5	-5.165	-0.608	-.5	-6.219	-0.639	-.5	-4.509	-0.585
Nova Scotia	-.5	-1.700	-0.617	-.5	-2.053	-0.424	-.5	-2.360	-0.455	-.5	-2.367	-0.456
New Brunswick	-.5	-2.345	-0.674	-.5	-3.144	-0.516	-.5	-3.788	-0.552	-.5	-4.488	-0.584
Quebec	-.5	-1.337	-0.568	-.5	-1.378	-0.329	-.5	-1.459	-0.343	-.5	-1.397	-0.333
Ontario	-.5	-0.659	-0.384	-.5	-0.614	-0.131	-.5	-0.580	-0.118	-.5	-0.397	-0.161
Manitoba	-.5	-1.101	-0.524	-.5	-1.213	-0.298	-.5	-1.254	-0.306	-.5	-1.189	-0.293
Saskatchewan	-.5	-2.053	-0.651	-.5	-2.610	-0.477	-.5	-2.973	-0.504	-.5	-1.154	-0.286
Alberta	-.5	-1.078	-0.519	-.5	-1.159	-0.287	-.5	-1.156	-0.286	-.5	-0.694	-0.160
British Columbia	-.5	-0.746	-0.421	-.5	-0.667	-0.151	-.5	-0.645	-0.143	-.5	-0.675	-0.153

TABLE 20 (continued)

Note: $\Delta A1$, $\Delta A2$ and $\Delta A3$ represent the ways in which the three allotment ratios A1, A2 and A3 decrease as C increases over time. The values shown are, therefore, the first derivatives of the functions. For example, as C based on personal income per weighted child of school-age in Newfoundland increases by .10, the allotment ratio per weighted child of school-age will decrease by .05, .3467 and .0732 for A1, A2 and A3, respectively.

The mathematical formulas which determine the degrees of redistribution (i.e. the first derivatives) of the three alternative allotment ratios are:

$$\Delta A1 = \frac{dA1}{dC} = -.5$$

$$\Delta A2 = \frac{dA2}{dC} = \frac{-1}{C^2}$$

$$\Delta A3 = \frac{dA3}{dC} = -1 + .5C$$

Sources: The values of C for each of the four measures of fiscal capacity per unit of educational need were derived from Appendix Tables A-3 and A-4.

TABLE 21

REDISTRIBUTIVE IMPACT OF THREE ALLOTMENT FORMULAS ON PROVINCIAL SHARES OF A FEDERAL APPROPRIATION: EXAMPLE BASED ON PERSONAL INCOME PER WEIGHTED CHILD OF SCHOOL AGE, 1970

Province	Shares of Total Appropriation				Changes in Shares		
	So (No Redis-tribution)	S1	S2	S3	S1 (2)-(1)	S2 (3)-(1)	S3 (4)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Newfoundland	1.56	4.24	5.14	5.94	2.68	3.58	4.38
Prince Edward Island	0.35	0.76	0.84	1.00	0.41	0.49	0.65
Nova Scotia	2.88	4.61	4.65	5.44	1.73	1.77	2.56
New Brunswick	2.13	4.40	4.77	5.69	2.27	2.64	3.56
ATLANTIC REGION	6.92	14.01	15.40	18.07	7.09	8.48	11.15
Quebec	25.23	33.11	32.10	36.05	7.88	6.87	10.82
Ontario	42.02	26.22	26.36	19.32	-15.80	-15.66	-22.70
Manitoba	4.31	4.74	4.51	4.74	0.43	0.20	0.43
Saskatchewan	3.20	5.96	6.26	7.44	2.76	3.06	4.24
Alberta	7.49	8.07	7.68	8.04	0.58	0.19	0.55
PRAIRIE REGION	15.00	18.77	18.45	20.22	3.77	3.45	5.22
British Columbia	10.83	7.89	7.69	6.34	- 2.94	- 3.14	- 4.49
TOTAL	100.00	100.00	100.00	100.00	-	-	-
EXTENT OF REDISTRIBUTION	-	...	...	...	18.74%	18.80%	27.19%

TABLE 21 (continued)

Note: So, S1, S2 and S3 represent provincial shares of a total federal appropriation based on provincial allotment ratios Ao, A1, A2 and A3, respectively, and the weighted school-age population in each province. Each province's share was determined according to the following formula:

$$Si = \frac{AiEi}{\sum_{i=1}^{n}(AiEi)}$$

where E is a province's weighted school-age population aged 5 to 19. The age-group 15 to 19 was given a weight of 1.5 relative to the 5 to 14 age-group to compensate in part for the greater unit cost of schooling for children at the secondary level.

Sources: The alternative values of A were derived from Table A-5. Weighted school-age population was derived from the same sources as Table A-1.

TABLE 22

REDISTRIBUTIVE IMPACT OF THREE ALLOTMENT FORMULAS ON PROVINCIAL SHARES OF A FEDERAL APPROPRIATION: EXAMPLE BASED ON TOTAL DECLARED INCOME OVER $2500 PER WEIGHTED CHILD OF SCHOOL AGE, 1970

Province	Shares of Total Appropriation				Changes in Shares		
	So (No Redis-tribution)	S1	S2	S3	S1 (2)-(1)	S2 (3)-(1)	S3 (4)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Newfoundland	1.24	4.56	6.26	6.74	3.32	5.02	5.50
Prince Edward Island	0.25	0.86	1.16	1.27	0.61	0.91	1.02
Nova Scotia	2.62	4.87	4.94	5.96	2.25	2.32	3.34
New Brunswick	1.85	4.71	5.35	6.35	2.86	3.50	4.50
ATLANTIC REGION	5.96	15.00	17.71	20.32	9.04	11.75	14.36
Quebec	24.87	33.48	31.53	36.02	8.61	6.66	11.15
Ontario	43.55	24.70	24.62	16.77	-18.85	-18.93	-26.78
Manitoba	4.10	4.92	4.58	5.04	0.82	0.48	0.94
Saskatchewan	2.84	6.33	6.82	8.21	3.49	3.98	5.37
Alberta	7.22	8.33	7.71	8.36	1.11	0.49	1.14
PRAIRIE REGION	14.16	19.58	19.11	21.61	5.42	4.95	7.45
British Columbia	11.46	7.24	7.03	5.28	- 4.22	- 4.43	- 6.18
TOTAL	100.00	100.00	100.00	100.00	-	-	-
EXTENT OF REDISTRIBUTION	-	...	...	...	23.07%	23.36%	32.96%

See Table 21 for explanatory notes and sources.

TABLE 24

REDISTRIBUTIVE IMPACT OF THREE ALLOTMENT FORMULAS ON PROVINCIAL SHARES OF A FEDERAL APPROPRIATION: EXAMPLE BASED ON TAXABLE INCOME PER WEIGHTED CHILD OF SCHOOL AGE, 1970

Province	Shares of Total Appropriation				Changes in Shares		
	So (No Redistribution)	S1	S2	S3	S1 (2)-(1)	S2 (3)-(1)	S3 (4)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Newfoundland	1.13	4.66	6.70	6.93	3.53	5.57	5.80
Prince Edward Island	0.22	0.89	1.24	1.30	0.67	1.02	1.08
Nova Scotia	2.43	5.05	5.18	6.31	2.62	2.75	3.88
New Brunswick	1.68	4.87	5.74	6.69	3.19	4.06	5.01
ATLANTIC REGION	5.46	15.47	18.86	21.23	10.01	13.40	15.77
Quebec	24.16	34.20	31.75	37.08	10.04	7.59	12.92
Ontario	44.79	23.43	23.42	14.88	-21.36	-21.37	-29.91
Manitoba	4.04	5.00	4.55	5.10	0.96	0.51	1.06
Saskatchewan	2.66	6.51	7.12	8.57	3.85	4.46	5.91
Alberta	7.24	8.33	7.53	8.23	1.09	0.29	0.99
PRAIRIE REGION	13.94	19.84	19.20	21.90	5.90	5.26	7.96
British Columbia	11.65	7.06	6.77	4.91	- 4.59	- 4.88	- 6.74
TOTAL	100.00	100.00	100.00	100.00	-	-	-
EXTENT OF REDISTRIBUTION	-	...	...	...	25.95%	26.25%	36.65%

See Table 21 for explanatory notes and sources.

TABLE 24

REDISTRIBUTIVE IMPACT OF THREE ALLOTMENT FORMULAS ON PROVINCIAL SHARES OF A FEDERAL APPROPRIATION: EXAMPLE BASED ON THE YIELD OF A REPRESENTATIVE PROVINCIAL TAX SYSTEM PLUS LOCAL TAXATION PER WEIGHTED CHILD OF SCHOOL AGE, 1970

Province	Shares of Total Appropriation				Changes in Shares		
	So (No Redistribution)	S1	S2	S3	S1 (2)-(1)	S2 (3)-(1)	S3 (4)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Newfoundland	1.09	4.69	7.05	7.20	3.60	5.96	6.11
Prince Edward Island	0.26	0.86	1.08	1.23	0.60	0.82	0.97
Nova Scotia	2.43	5.05	5.30	6.46	2.62	2.87	4.03
New Brunswick	1.55	5.00	6.39	7.25	3.45	4.84	5.70
ATLANTIC REGION	5.33	15.60	19.82	22.14	10.27	14.49	16.81
Quebec	24.68	33.67	31.78	36.80	8.99	7.10	12.12
Ontario	40.86	27.41	26.27	20.88	-13.45	-14.59	-19.98
Manitoba	4.14	4.89	4.54	5.03	0.75	0.40	0.89
Saskatchewan	4.27	4.89	4.54	4.98	0.62	0.27	0.71
Alberta	9.33	6.22	5.97	4.74	- 3.11	- 3.36	- 4.59
PRAIRIE REGION	17.74	16.00	15.05	14.75	- 1.74	- 2.69	- 2.99
British Columbia	11.39	7.32	7.08	5.43	- 4.07	- 4.31	- 5.96
TOTAL	100.00	100.00	100.00	100.00	-	-	-
EXTENT OF REDISTRIBUTION	-	...	...	...	20.63%	22.26%	30.53%

See Table 21 for explanatory notes and sources.

TABLE 25

REDISTRIBUTIVE IMPACT OF TOTAL FEDERAL TRANSFER PAYMENTS (CONDITIONAL AND UNCONDITIONAL) TO PROVINCIAL AND LOCAL GOVERNMENTS, BASED ON FOUR MEASURES OF FISCAL CAPACITY, 1970 (PERCENTAGES)

Province	No Redistribution, Based on Fiscal Capacity As Measured By: Personal Income	Declared Income Over $2500	Taxable Income	Representative Tax System Plus Local Taxation	Actual Shares of Total Federal Transfer Payments to Provincial and Local Governments
	(1)	(2)	(3)	(4)	(5)
Newfoundland	1.56	1.24	1.13	1.09	6.22
Prince Edward Island	0.35	0.25	0.22	0.26	1.44
Nova Scotia	2.88	2.62	2.43	2.43	6.23
New Brunswick	2.13	1.85	1.68	1.55	5.71
ATLANTIC REGION	6.92	5.96	5.46	5.33	19.60
Quebec	25.23	24.87	24.16	24.68	31.58
Ontario	42.02	43.55	44.79	40.86	25.80
Manitoba	4.31	4.10	4.04	4.14	5.23
Saskatchewan	3.20	2.84	2.66	4.27	4.67
Alberta	7.49	7.22	7.24	9.33	6.98
PRAIRIE REGION	15.00	14.16	13.94	17.74	16.88
British Columbia	10.83	11.46	11.65	11.39	6.14
TOTAL	100.00	100.00	100.00	100.00	100.00
EXTENT OF REDISTRIBUTION[a]	-	-	-	-	...

TABLE 25 (continued)

Province	Changes in Shares Based on Fiscal Capacity As Measured By			
	Personal Income	Declared Income Over $2500	Taxable Income	Representative Tax System Plus Local Taxation
	(6) (5)-(1)	(7) (5)-(2)	(8) (5)-(3)	(9) (5)-(4)
Newfoundland	4.66	4.98	5.09	5.13
Prince Edward Island	1.09	1.19	1.22	1.18
Nova Scotia	3.35	3.61	3.80	3.80
New Brunswick	3.58	3.86	4.03	4.16
ATLANTIC REGION	12.68	13.64	14.14	14.27
Quebec	6.35	6.71	7.42	6.90
Ontario	-16.22	-17.75	-18.99	-15.06
Manitoba	0.92	1.13	1.19	1.09
Saskatchewan	1.47	1.83	2.01	0.40
Alberta	- 0.51	- 0.24	- 0.26	- 2.35
PRAIRIE REGION	1.88	2.72	2.94	- 0.86
British Columbia	- 4.69	- 5.32	- 5.51	- 5.25
TOTAL	-	-	-	-
EXTENT OF REDISTRIBUTION[a]	20.91	23.07	24.50	22.66

TABLE 25 (continued)

[a] Consists of the portion of the total federal transfer which is reallocated from rich (C>1) to poor (C<1) provinces. When the basis for measuring redistribution is personal income, total declared income over $2500 or taxable income, this means reallocation of shares from Ontario and British Columbia. See Table A-2. For the representative provincial tax system plus local taxation, it consists of the shares reallocated from Ontario, British Columbia and Alberta. See Table A-4.

Sources: Columns (1) to (4) from Tables 21 to 24, respectively. Column (5) derived from Table A-7.

TABLE 26

REDISTRIBUTIVE IMPACT OF TOTAL FEDERAL CONDITIONAL AND UNCONDITIONAL TRANSFER PAYMENTS TO PROVINCIAL AND LOCAL GOVERNMENTS, BASED ON THE DISTRIBUTION OF TOTAL TAXABLE INCOME AS THE MEASURE OF FISCAL CAPACITY, 1960, 1965 AND 1970 (PERCENTAGES)

Province	Changes in Shares								
	Conditional			Unconditional			Total		
	1960	1965	1970e	1960	1965	1970e	1960	1965	1970e
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	3.24	4.46	3.60	10.87	9.50	8.53	6.15	6.02	5.09
Prince Edward Island	0.98	0.67	0.91	2.33	2.31	1.96	1.49	1.18	1.22
Nova Scotia	3.09	2.35	2.38	9.71	10.52	7.10	5.61	4.87	3.80
New Brunswick	3.61	3.09	2.99	9.09	9.89	6.45	5.70	5.19	4.03
ATLANTIC REGION	10.92	10.57	9.88	32.00	32.22	24.04	18.95	17.26	14.14
Quebec	- 6.65	- 2.61	- 1.64	6.04	8.70	28.51	- 1.81	0.89	7.42
Ontario	-10.94	-11.28	-10.48	-39.88	-35.13	-38.77	-21.97	-18.66	-18.99
Manitoba	1.17	1.39	1.40	1.60	3.79	0.71	1.33	2.13	1.19
Saskatchewan	2.47	1.46	2.07	6.20	4.06	1.85	3.89	2.27	2.01
Alberta	0.01	1.43	1.85	1.28	- 3.30	- 5.16	0.50	- 0.03	- 0.26
PRAIRIE REGION	3.65	4.28	5.32	9.08	4.55	- 2.60	5.72	4.37	2.94
British Columbia	3.02	- 0.96	- 3.08	- 7.24	-10.34	-11.18	- 0.89	- 3.86	- 5.51
TOTAL	-	-	-	-	-	-	-	-	-
EXTENT OF REDISTRIBUTION[a]	7.92	12.24	13.56	47.12	45.47	49.95	22.86	22.52	24.50

TABLE 26 (continued)

[a] Consists of the portion of the total federal transfer which is reallocated from rich ($C>1$) to poor ($C<1$) provinces. Based on taxable income in 1960, 1965 and 1970, this means the net reallocation of shares from Ontario and British Columbia to the other eight provinces. See Table A-2.

Source: Derived from Table A-8.

TABLE 27

REDISTRIBUTIVE IMPACT OF FEDERAL DIRECT AND ESTIMATED INDIRECT CONTRIBUTIONS TO ELEMENTARY AND SECONDARY EDUCATION, BASED ON FOUR ALTERNATIVE MEASURES OF FISCAL CAPACITY, 1970 (PERCENTAGES)

Province	No Redistribution, Based on Fiscal Capacity As Measured By				
	Personal Income	Declared Income Over $2500	Taxable Income	Representative Tax System Plus Local Taxation	Estimated Total Federal Contribution
	(1)	(2)	(3)	(4)	(5)
Newfoundland	1.56	1.24	1.13	1.09	4.13
Prince Edward Island	0.35	0.25	0.22	0.26	1.15
Nova Scotia	2.88	2.62	2.43	2.43	7.69
New Brunswick	2.13	1.85	1.68	1.55	6.93
ATLANTIC REGION	6.92	5.96	5.46	5.33	19.90
Quebec	25.23	24.87	24.16	24.68	49.30
Ontario	42.02	43.55	44.79	40.86	11.14
Manitoba	4.31	4.10	4.04	4.14	5.67
Saskatchewan	3.20	2.84	2.66	4.27	6.25
Alberta	7.49	7.22	7.24	9.33	4.56
PRAIRIE REGION	15.00	14.16	13.94	17.74	16.48
British Columbia	10.83	11.46	11.65	11.39	3.18
TOTAL	100.00	100.00	100.00	100.00	100.00
EXTENT OF REDISTRIBUTION[a]	-	-	-	-	[illegible]

TABLE 27 (continued)

Province	Personal Income	Declared Income Over $2500	Taxable Income	Representative Tax System Plus Local Taxation
	Changes in Provincial-Local Shares Based on Fiscal Capacity As Measured By			
	(6) (5)-(1)	(7) (5)-(2)	(8) (5)-(3)	(9) (5)-(4)
Newfoundland	2.57	2.89	3.00	3.04
Prince Edward Island	0.80	0.90	0.93	0.89
Nova Scotia	4.81	5.07	5.26	5.26
New Brunswick	4.80	5.08	5.25	5.38
ATLANTIC REGION	12.98	13.94	14.44	14.57
Quebec	24.07	24.43	25.14	24.62
Ontario	-30.88	-32.41	-33.65	-29.72
Manitoba	1.36	1.57	1.63	1.53
Saskatchewan	3.05	3.41	3.59	1.98
Alberta	- 2.93	- 2.66	- 2.68	- 4.77
PRAIRIE REGION	1.48	2.32	2.54	- 1.26
British Columbia	- 7.65	- 8.28	- 8.47	- 8.21
TOTAL	-	-	-	-
EXTENT OF REDISTRIBUTION[a]	38.53	40.69	42.12	42.70

[a] See Table 25.

Sources: Columns (1) to (4) from Tables 21 to 24, respectively. Column (5) derived from Table A-14.

TABLE 28

REDISTRIBUTIVE EFFECTS OF FEDERAL DIRECT SPENDING AND ESTIMATED INDIRECT CONTRIBUTIONS TO ELEMENTARY AND SECONDARY EDUCATION, BASED ON THE DISTRIBUTION OF TOTAL TAXABLE INCOME AS THE MEASURE OF FISCAL CAPACITY, 1960, 1965 AND 1970 (PERCENTAGES)

Province	Changes in Provincial-Local Shares								
	Federal Direct Spending			Estimated Indirect Contribution			Total		
	1960	1965	1970e	1960	1965	1970e	1960	1965	1970e
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	- 0.06	- 0.77	- 1.01	8.55	5.39	5.59	5.41	2.08	3.00
Prince Edward Island	0.33	0.05	0.10	1.50	1.75	1.47	1.07	0.84	0.93
Nova Scotia	2.17	- 0.66	2.21	10.48	9.90	7.24	7.45	4.23	5.26
New Brunswick	0.40	- 0.86	4.22	7.22	7.87	5.91	4.73	3.18	5.25
ATLANTIC REGION	2.84	- 2.26	5.52	27.75	24.91	20.21	18.66	10.33	14.44
Quebec	-10.20	2.35	15.74	7.87	15.59	31.23	1.29	8.48	25.14
Ontario	-21.69	-14.98	-27.22	-39.03	-34.19	-37.81	-32.70	-23.87	-33.65
Manitoba	8.53	2.37	3.27	2.23	4.23	0.57	4.53	3.23	1.63
Saskatchewan	8.33	2.24	6.17	6.53	3.52	1.92	7.18	2.83	3.59
Alberta	6.23	4.80	0.75	2.16	- 3.55	- 4.91	3.64	0.93	- 2.68
PRAIRIE REGION	23.09	9.41	10.19	10.92	4.20	- 2.42	15.35	6.99	2.54
British Columbia	5.96	5.46	- 4.23	- 7.51	-10.51	-11.21	- 2.60	- 1.93	- 8.47
TOTAL	-	-	-	-	-	-	-	-	-
EXTENT OF REDISTRIBUTION	15.73	9.52	31.45	46.54	44.70	49.02	35.30	25.80	42.12

Sources: Shares of Taxable Income from Table A-8, Columns (1) to (3). Shares of Federal Direct and Estimated Indirect Contributions to Elementary and Secondary Education derived from Table A-14.

TABLE 29

FEDERAL DIRECT SPENDING AND ESTIMATED INDIRECT CONTRIBUTION TO ELEMENTARY AND SECONDARY EDUCATION PER UNIT OF EDUCATIONAL NEED (I.E. PER WEIGHTED CHILD AGED 5 TO 19), BY PROVINCE, 1960, 1965 AND 1970

Province	Direct Federal Spending 1960	Direct Federal Spending 1965	Direct Federal Spending 1970	Estimated Indirect Federal Contribution 1960	Estimated Indirect Federal Contribution 1965	Estimated Indirect Federal Contribution 1970	Estimated Total Federal Contribution 1960	Estimated Total Federal Contribution 1965	Estimated Total Federal Contribution 1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	$ 1.86	$ 1.26	$ 0.90	$34.32	$31.73	$75.60	$36.18	$32.99	$ 76.50
Prince Edward Island	5.03	7.31	12.35	29.18	49.57	99.60	34.20	56.88	111.95
Nova Scotia	6.62	6.60	26.17	33.14	45.32	84.18	39.75	51.91	110.35
New Brunswick	3.24	3.58	38.08	25.43	39.75	75.63	28.66	43.33	113.71
Quebec	2.56	15.63	28.90	11.07	20.15	61.92	13.64	35.79	90.82
Ontario	5.01	16.20	10.88	2.48	4.92	6.67	7.49	21.12	17.55
Manitoba	17.32	23.86	34.25	15.74	26.55	33.31	33.06	50.41	67.56
Saskatchewan	14.63	21.08	40.72	21.58	22.13	32.54	36.20	43.20	73.26
Alberta	12.10	27.24	21.71	14.63	6.33	9.78	26.73	33.57	31.48
British Columbia	14.11	35.82	16.76	5.63	2.05	1.54	19.73	37.87	18.30
National Average	$ 6.51	$17.76	$21.14	$11.33	$15.31	$32.62	$17.84	$33.07	$ 53.75

Sources: Financial statistics from Appendix Table A-13; population aged 5 to 19 from Statistics Canada, Health and Welfare Division, Vital Statistics (annual), each child aged 15 to 19 given a weight of 1.5 to recognize greater cost of secondary education.

TABLE 30

PROVINCIAL ALLOTMENT RATIOS BASED ON FEDERAL DIRECT SPENDING AND ESTIMATED INDIRECT CONTRIBUTION TO ELEMENTARY AND SECONDARY EDUCATION PER WEIGHTED CHILD OF SCHOOL AGE, BY PROVINCE, 1960, 1965 AND 1970

Province	Direct Federal Spending			Estimated Indirect Federal Contribution			Estimated Total Federal Contribution		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	0.29	0.07	0.04	3.03	2.07	2.32	2.03	1.00	1.42
Prince Edward Island	0.77	0.41	0.58	2.58	3.24	3.05	1.92	1.72	2.08
Nova Scotia	1.02	0.37	1.24	2.92	2.96	2.58	2.23	1.57	2.05
New Brunswick	0.50	0.20	1.80	2.24	2.60	2.32	1.61	1.31	2.12
Quebec	0.39	0.88	1.37	0.98	1.32	1.90	0.76	1.08	1.69
Ontario	0.77	0.91	0.51	0.22	0.32	0.20	0.42	0.64	0.33
Manitoba	2.66	1.34	1.62	1.39	1.73	1.02	1.85	1.52	1.26
Saskatchewan	2.25	1.19	1.93	1.91	1.45	1.00	2.03	1.31	1.36
Alberta	1.86	1.53	1.03	1.29	0.41	0.29	1.50	1.02	0.59
British Columbia	2.17	2.02	0.79	0.50	0.13	0.05	1.11	1.15	0.34
National Average	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: Derived from Table 29.

CHAPTER VII

OVERVIEW AND CONCLUSIONS

Prior to drawing conclusions and making recommendations, it will be useful to review the major arguments and positions taken in this dissertation and to summarize the empirical findings.

Since greater equality in education is the major goal of fiscal redistribution the dissertation began with a discussion of the evolving concept of equality. Two aspects of the concept of equality may have positive social value: equality of economic and social outcomes, and equality of opportunity or access to pursue these outcomes. With the greater commitment to egalitarian values of public service which has manifested itself in recent decades, there has been a shift in emphasis from equality of opportunity to equality of results. Parallel to this, in educational philosophy, there has been a shift in emphasis from equality of education expressed as equality of access to a common curriculum and common facilities to equality of educational attainment for individuals, regardless of their differing cultural, racial and linguistic backgrounds and differing abilities. As we described in Chapter I, in the United States, concern about equality of educational attainment is associated with popular and academic responses to publication by the United States Office of Education of the findings of a Survey of Equality of Educational Opportunity by James S. Coleman and others. It is too soon to assess whether, in the United States or elsewhere, that concept of equality in education can be a source of practical policy objectives. In Canada, in any case, the concept of equality in education is focused primarily upon the equalizing of input resources brought to the schools through the actions of the school administration, although there is also some concern about the impact on achievement caused by the differential aptitudes and socio-economic backgrounds of the students.

Some of Coleman's disciples in the United States, notably Christopher Jencks, have gone far beyond the goal of equalizing educational achievement to criticism of the public school systems as components of the American social-industrial system, for not accomplishing greater equality of incomes through equalization of formal schooling. This dissertation takes the position that research such as that conducted by Jencks focuses too narrowly upon schools as means rather than as an end in themselves. Even if greater equality of access or achievement in education does not prove, in itself, to be sufficient to produce equal economic social reward (i.e. if equality of educational opportunity--however defined--does not contribute substantially to equality of incomes), the case for more equal provision of education service is not destroyed. This thesis assumes that, whatever the prevailing concept of educational equality in Canada, one of our major objectives in the provision of the public service which is education will be alleviation of the unequally distributed ability to support the service by the unequal distribution of public resources.

As soon as the principle of unequal distribution of public resources to offset unequally distributed private resources is accepted (whether as an end in itself or as a means to an end) a number of critical questions arise. These concern the definition and measurement of needs, of the capacity to meet needs, and of the allotment functions which specify the relationship between the allotment per unit of need and fiscal capacity per unit of need. The dissertation has been concerned with these questions as they apply to the redistributive implications of Canadian federal-provincial fiscal arrangements for elementary and secondary school systems in the provinces. Some attention has also been given to the manner in which the problem of dynamic imbalance between spending needs and revenue sources has been met at the federal-provincial level.

The need for intergovernmental fiscal arrangements in a federal state arises mainly because of the constitutional division of spending responsibilities and taxing powers between the central and regional governments. This division of powers is the political compromise which was fundamental to the establishment of national unity, and it usually is essential to its preservation thereafter. Early in the thesis we briefly summarized other political and economic arguments commonly advanced in favour of decentralization, and discussed in more detail the problems, arising from decentralization, which create a need for intergovernmental fiscal arrangements.

The costs of decentralization were dealt with in terms of allocative inefficiencies and distributional inequities. The first type of allocative inefficiency identified was dynamic imbalances between spending responsibilities and taxing powers. Spending responsibilities and revenue sources may be roughly in balance for the sovereign levels of government at the time of federation, but it is unlikely that they will remain in balance for any prolonged period thereafter. As social and economic conditions change, the priorities for desired public services also change and the relative importance of various revenue sources wax and wane. In a unitary state the central government can alter spending patterns and tax structures at will; in a federal state the original division of powers is a major constraint. In Canada, demands for education and other social services, which are primarily the constitutional responsibility of the provinces, have grown faster than the yields of the major taxes on which provinces and localities relied until early in the sixties.

A second type of allocative inefficiency arising from decentralization consists of suboptimal levels of service due to spillovers of costs or gains among jurisdictions. Such spillovers, occur because people, effects and things move from place to place, and they provide an economic rationale for interference by central governments. Only a senior level of government can internalize or encompass all of the costs and benefits arising from a service provided by a lower level of government in such a manner as to (a) provide the desired quality of service or (b) establish an intergovernmental fiscal arrangement which will facilitate or induce a more desirable pattern of resource allocation by the lower level of government.

Most interprovincial disparities arise because jurisdictions with low levels of real income must place heavier tax burdens on their citizens in order to provide a standard of service similar to that provided in wealthier provinces. If the prevailing social philosophy, or political expediency, requires alleviation of this situation, then a distributional policy will be devised and implemented.

One objection to a federal government attempting fiscal redistribution among provinces is that its measures may perpetuate the misallocation of resources which is at the very basis of the condition it is trying to alleviate. The higher levels of public service permitted by fiscal redistribution, it is argued, have the effect of impeding the desirable outflow of labour and capital from the recipient jurisdictions, which would otherwise have occurred. It must be acknowledged that the long-term solution to the self-perpetuating cycle of low incomes bred by low quality production factors might well be migration or comprehensive regional development. However, the position taken in this study, has been that fiscal transfers do not necessarily impede population mobility; they may simply alter the condition of, and motivation for, migration. Rather than being forced to migrate by the push of adversity, potential migrants from have-not regions where fiscal transfers have ensured adequate standards of public services, may well be motivated by the greater opportunities for individual initiative. Whether they migrate or not they become more productive citizens so that the country as a whole benefits.

Next we considered the arguments for an economic rationale for the division of political responsibility among levels of government in a federal system. The discussion explored the question both in terms of the geographical (or spatial) distribution of benefits in the consumption of public services, and in terms of economies of scale in the production of public services. Both approaches were found wanting in various respects, and we concluded that, even in purely economic terms, no simple model or prescription for the allotment of powers between sovereign levels of government is likely to be satisfactory.

There are two approaches to solving or alleviating the distributional problem in federal states, the one adopted depending on one's concept of federalism. One holds that as long as the central government treats its citizens equitably, and each province does the same, the overall impact on the individual citizen of the various government budgets may be ignored. Extreme adherents of this position see no need for a central distribution function in a federal state.

The other position, and the one favoured in this dissertation, supports a strong central distribution function as proposed by Buchanan. Buchanan's concept of fiscal equity requires individual redistributive measures to ensure that there is equal treatment of individuals in like circumstances, regardless of where they live. The strict application of such a concept may be unworkable in complex constitutional contexts; but Buchanan's notion of horizontal equity can be approximated through a combination of intergovernmental fiscal transfers which permit comparable standards of service with comparable tax burdens, and direct transfers to individuals in order to produce greater equality of net personal income.

Since the major purpose of this study has been to measure the distributional implications of federal-provincial fiscal arrangements in Canada and also to consider some of their allocational consequences, we considered it necessary to distinguish between the objectives of the distribution and allocation functions of government (i.e. between equity and efficiency). Efficiency we treat as a precise concept, concerned in this case with the assessment of total benefits in relation to costs, with the objective of maximizing net benefits. Equity, on the other hand, we treat as a subjective or normative concept, concerned with the questions, who benefits and who pays, with the answers based on value judgments as to who ought to benefit and pay.

In this study, equity in education is assumed to be a primary policy objective, while efficiency is a secondary performance goal to be pursued in the deployment of resources to achieve educational equity or any other policy objective. In this sense, there can be no real conflict between equity and efficiency.

Alternative intergovernmental and other adjustments were identified for overcoming three types of problems which arise in multi-level systems of government: the adequacy problem arising from aggregate imbalances in spending responsibilities and revenue sources; the distribution problem arising from widely differing levels of real income and service needs; and, lastly, the problem of suboptimal levels or standards of service resulting from spillovers of costs and/or benefits among communities or provinces.

Since the division of spending responsibility and taxing authority is usually constitutionally defined and rigid, the common solution to the problem of aggregate fiscal imbalance has been some intergovernmental fiscal arrangement. Ideally, such arrangements will be neutral with respect to spending decisions of the recipient government and will preserve the existing distribution of income, wealth or tax revenue among units in the recipient level of government.

Tax coordination can provide two levels of government, both with joint legal access to tax sources, with adequate revenue coverage while avoiding duplicate administrative costs and other tax inequities. The two types of cooperative tax arrangement most widely used in Canada to promote better fiscal balance have been tax rental and tax sharing. The pros and cons of these arrangements were discussed, and the history of their use in Canada was reviewed.

There is, in addition, a type of fiscal transfer or grant which may be used to alleviate aggregate fiscal inadequacy, the so-called derivation or tax relief grant. A derivation grant merely transfers from a higher to a lower level of government, taxes levied by the former within the recipients' own borders. In their simplest form, derivation transfers provide tax relief but no fiscal redistribution.

We began the discussion of intergovernmental adjustments intended to promote greater distributional equity with a description of the general characteristics of grants in terms of the level of transfer, the intended use of the funds transferred, the objectives to be served by the donor and the conditions imposed on the recipient. The decision to attempt redistribution in general or in respect of elementary and secondary education in particular, by means of fiscal redistribution is a political decision. However, once the decision to effect redistribution has been made, the extent to which the desired degree of redistribution is achieved depends crucially upon correct identification and measurement of the relative differences in real or program need, fiscal need, fiscal capacity, and upon the mathematical function which interrelates these variables and specifies the allotment ratio per unit of need. That is, systematic fiscal redistribution requires the recognition of differences in fiscal capacity to meet needs and some means of distributing funds in an inverse relation to fiscal capacity per unit of real and/or fiscal need.

Having dealt at some length with the concept of educational need, there followed a detailed analysis of the relative merits of current approaches to measuring fiscal capacity. These range from the income approach, viewing fiscal capacity as the ultimate pool of resources from which all taxes are paid, to the representative tax system approach, treating fiscal capacity as the relative amounts of revenue resulting from the application of a uniform representative tax structure to selected tax bases in the various provinces.

The income approach has some major shortcomings; but the more we introduce technical and statistical refinements to overcome them, the closer the resulting measures of fiscal capacity approximate actual tax bases rather than the ultimate pool of resources from which most taxes are to be paid. Moreover, the closer the measure used to estimate fiscal capacity resembles the actual tax bases of the various provinces, the closer the revenue yields obtained by applying a given tax structure will resemble the actual pattern of provincial tax yields.

The choice of measure used depends on the extent to which one or both of the following sets of factors are recognized: the economic structures of the various provinces; and the actual tax structures and taxing practices of the various provinces. It is desirable, and even necessary, to use several measures of fiscal capacity in assessing the redistributive implications of alternative allotment schemes. However, we have a preference for those which recognize differences in economic structures and actual tax structures by measuring the differential yields when national average rates are applied to provincial tax bases, that is to say, the representative tax system approach to measuring fiscal capacity.

Three basic types of fiscal transfer were discussed. The simple population-based transfer distributes funds in direct proportion to the numbers of persons receiving a service or involved in its provision, but explicitly recognizes neither fiscal capacity nor unit cost differences. Revenue equalization transfers compensate for differences in relative ability to finance one or more public services as measured by fiscal capacity per unit of need. Their primary objective is fiscal redistribution, usually without condition as to how the proceeds are spent by the recipient governments. Finally, the fiscal need grant recognizes differences in both population-related needs and the recipients' relative abilities to raise revenue to meet those needs; but it also would compensate for unit cost differences caused by factors such as geography, population concentration and price levels. While fiscal need transfers are most favoured in the theoretical literature, they are seldom if ever fully implemented because of the immense problems involved in developing accurate, detailed measures of unit cost differences, obtaining political acceptance for them and keeping them up-to-date.

The merits and feasibility of three other means of achieving distribution objectives in a federal state were also discussed. The first of these was a differential shift of spending responsibilities in which uniform federal tax rates would prevail but the range of services administered by the federal government would vary by province. The criterion for deciding which powers would remain under provincial-local control could be the probable geographic range of benefits.

Another was the consolidation of provincial boundaries into larger regions. Although both of these alternatives to fiscal transfers have some logical appeal, the administrative and political problems they would create render them virtually unworkable in a federal union with strong, well-established regional loyalties. The third is reduction of interprovincial variations in personal income by means of direct transfer payments to individuals. With the rise of the welfare state, this approach came into widespread use in Canada and has undoubtedly contributed to a reduction in interprovincial variations in per capita personal income.[96] Due to their uncertain incentive and other economic and social consequences, however, it seems doubtful that direct personal transfers could become a perfect alternative to redistributive intergovernmental transfers. It is also recognized that comprehensive regional development schemes for raising growth rates of low-growth areas and increasing returns to factors of production, labour in particular, may result in an efficient, long-term solution to interprovincial differences in per capita income levels.

In this thesis our treatment of the third objective of intergovernmental transfers, the promotion of greater allocative efficiency, was limited to a general discussion of the circumstances in which a central government may be justified in inducing a shift in the pattern of spending in lower levels of government. We also discussed the types of responses which a fiscal transfer may make in the pattern or structure of spending in the recipient governments: neutral, stimulative or substitutive.

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[96] Between 1950 and 1970 total government transfer payments to persons increased from $1,023 million to $7,021 million or from 7.17 per cent of total personal income to 10.59 per cent. By province for 1970, government transfer payments varied from 21.5 per cent of personal income in Newfoundland to 8.9 per cent in Ontario. Source: derived from Statistics Canada, National Income and Expenditure Accounts, Historical Revision, 1926 1971 (Ottawa: Information Canada, 1972), Tables 35 and 42.

The manner in which we have met the problem of dynamic imbalances in the spending responsibilities and revenue sources of the federal and provincial governments in Canada was documented in Chapter V. In Chapter VI empirical exercises analyzed the redistributive impact of federal direct spending and fiscal transfers to the provinces in alleviating the distribution problem with respect to the funding of elementary and secondary education. The exercises are summarized here.

Since the redistributive impact of any intergovernmental fiscal transfer program depends crucially upon the measure of real or program need and the measure of fiscal capacity adopted, Chapter VI began by discussing alternative measures of educational need and fiscal capacity. Most measures of potential educational need are based on live births or school-age population. The decline in potential educational needs as measured by birth rates between 1960 and 1970 was documented, together with the widening dispersion of birth rates among the provinces due to differential rates of decline in birth rates. We decided to measure present educational need in terms of the provincial population of the relevant age groups (that is, 5 to 19 years). In order to give some recognition to differences in fiscal need, and to allow for higher unit costs at the secondary level, the 15 to 19 age group was given a weight of 1.5 relative to the 5 to 14 group. More sophisticated weights could have been devised; but, in the absence of indexes on which to base them the simple weighted school-age population were judged adequate for use as the basic measure of educational fiscal need. Three measures of relative educational need were then developed by relating weighted school-age population to total population, to the economically active population, the labour force, and to persons with tax returns in excess of a minimum level. The most notable feature of all three measures was the similarity of the rankings of the provinces (i.e. the Atlantic Region, highest, Ontario and British Columbia lowest). The more closely the school-age population was related to those in the population whose economic efforts must provide for the service, the greater the dispersion of relative educational need among the provinces.

Making use of the earlier discussion of the concept of fiscal capacity and alternative approaches to its measurement, four measures were then selected, varying from personal income which approximates the ultimate pool of resources from which most taxes are paid to a representative provincial tax system which recognizes differences in provincial economies and tax bases. Between these extremes, two measures were chosen based on personal taxation statistics--total declared income over $2,500, and taxable income. These four measures of fiscal capacity were used as the bases for measures of relative ability to finance all public services per head of population, and to finance elementary and secondary education per weighted child of school age. The measures were made for all provinces for 1960, 1965 and 1970. It was found that Ontario, British Columbia and sometimes Alberta were above the national average in financial ability no matter how it was measured, while the four provinces of the Atlantic Region and sometimes Saskatchewan were well below it. For the provinces between these extremes of relative fiscal capacity, different measures produced substantially different fiscal capacity ratios, particularly for Alberta and Saskatchewan. This was due to the failure of personal income or personal taxation statistics to reflect income derived from indigenous resources which were owned by outsiders.

The major differences among the measures of fiscal capacity and the ratios based on them was not in the rankings of the provinces but in the spread or dispersion of these values and their distribution. For example, in 1970 the coefficients of dispersion of provincial amounts per weighted school age child based on the four measures of fiscal capacity were as follows: personal income, 27.4 per cent; total declared income over $2,500, 37.6 per cent; taxable income, 42.2 per cent; and the yield of a representative provincial tax system plus local tax revenue, 38.9 per cent (Table 17 and 18). These values are somewhat higher than those based on fiscal capacity per capita, suggesting greater interprovincial variation in financial ability to meet needs for elementary and secondary education than for the total range of provincial-local services.

Historically, the most notable change in provincial indexes based on the four measures of fiscal capacity has been a narrowing of the dispersion of values among provinces. In all four cases, the above coefficients of dispersion for 1970 were the lowest of any year for which calculations were made. The reasons for this trend might include the growth of transfer payments to persons, regional development programs and the influence of direct and indirect spending programs and unconditional transfers on provincial-local services including, of course, elementary and secondary education.

As noted above, effective fiscal redistribution policy requires accurate recognition of differences in real needs, differences in unit costs of meeting these needs, differences in fiscal capacity to meet needs and a formula or mechanism for distributing funds in an inverse relation to fiscal capacity per unit of real need and, ideally, fiscal need. In order to demonstrate the validity of these statements and provide benchmarks against which to subsequently compare the fiscal redistribution accomplished by federal direct spending and estimated indirect contributions to elementary and secondary education among provinces, the characteristics and redistributive consequences of three alternative allotment formulas were discussed and demonstrated. Weighted school age population was used as the measure of real provincial-local need for elementary and secondary education.

The allotment ratio or dependent variable in each function is the ratio of the amount received by each recipient province from a federal appropriation per unit of need to the weighted average of all recipients' receipts per unit of need. The independent variable in each case is the ratio of the recipient's fiscal capacity per unit of need to the weighted average fiscal capacity per unit of need. Fiscal redistribution requires that each function express an inverse relationship between the recipient's fiscal capacity and allotment ratios. The first allotment ratio (A1) consisted of a linear expression in which each recipient's allotment ratio decreases by a constant amount for a given increase in its fiscal capacity ratio. The second alternative formula (A2) consisted of a hyperbolic function in which the allotment ratio decreases at a decreasing rate as the fiscal capacity ratio increases. Finally, a parabolic function (A3) was used in which the allotment ratio per unit of need decreases at a constant rate as the fiscal capacity ratio per unit of need increases. Ao was used to designate the allotment ratio per unit of need where there is no redistribution, that is to say, where a federal appropriation is distributed in direct relation to fiscal capacity per unit of need. Allotment ratios were calculated according to each of the three alternative formulas, based on fiscal capacity ratios derived from each of the four alternative measures of fiscal capacity (Table 19).

In order to document the variations in degree of redistribution depending on measure of fiscal capacity for provinces with varying fiscal capacity ratios, first derivatives of the alternative allotment ratios were calculated (Table 20). It was shown that, for a given increase in the values of fiscal capacity ratios over time or among provinces at a given time, all provinces would lose the same amount of federal funds per unit of need under a linear allotment function because the linear allotment ratio decreases by a constant amount as the fiscal capacity ratio increases. Under a hyperbolic allotment function, the less able provinces would lose more than the able provinces for a given increase in the values of fiscal capacity ratios because the allotment ratio decreases at a decreasing rate as the fiscal capacity ratio increases. Finally, under a parabolic function the less able provinces would continue to lose relatively more than the able provinces but the differentials in amounts lost would be considerably less than under the hyperbolic function because the parabolic allotment ratio decreases at a constant rate as the fiscal capacity ratio increases.

Each province's share of a total federal appropriation consists of the ratio of that province's units of real or fiscal need times its allotment ratio per unit of need divided by the sum of these products for all provinces. Such calculations were made using the three alternative sets of allotment ratios based on each of the four measures of fiscal capacity. By comparing the resulting provincial shares with those which would prevail if federal funds were distributed in direct relation to the fiscal capacity ratios, the total extent or amount of fiscal redistribution among provinces was calculated (See Section A of Table 31).

As already noted, it was found that the parabolic allotment formula resulted in the greatest amount of fiscal redistribution, between 27 and 37 per cent of a total federal appropriation, depending upon which measure of fiscal capacity was used. The least fiscal redistribution, between 19 and 26 per cent, would be accomplished using the linear expression. The total amount of fiscal redistribution accomplished using the hyperbolic function would be just slightly greater than that based on the linear allotment function, also ranging from 19 to 26 per cent of the total federal appropriation, depending on measure of fiscal capacity. As one might expect, the rankings of the four amounts of fiscal redistribution accomplished under each of the alternative allotment functions were similar to those of the coefficients of dispersion of the four measures of fiscal capacity on which each was based. Thus, the greatest amount of redistribution under each alternative function was accomplished when fiscal capacity ratios were based on taxable income and the least was accomplished when they were based on personal income per weighted child of school age. Overall, the greatest extent of fiscal redistribution among the alternatives examined would result from a parabolic allotment function based on taxable income per weighted child of school age, 36.65 per cent, while the least, 18.74 per cent would be accomplished by a linear allotment function based on personal income per unit of need.

The choice among these or other alternative allotment functions is not easily made. In the absence of social rates of return to alternative transfer programs, it is not possible to choose among allotment functions on grounds of allocative efficiency. Lacking such knowledge, the choice among allotment alternatives and the degrees of redistribution implicit in them, remains essentially a matter of social or political philosophy.

Once an allotment function has been chosen, the amount of fiscal redistribution actually accomplished depends on the distribution of fiscal capacity ratios, given the distribution of real or fiscal need. A change in allotment ratio, fiscal capacity ratio or measure of real or fiscal need for any one province will affect the shares of a federal appropriation received by all other provinces and the total extent of fiscal redistribution achieved.

If the highest degree of fiscal redistribution for less able provinces were the criterion for selecting an allotment function, then the parabolic function, A3, would be the logical choice among the functions examined. Similarly, if total extent of fiscal redistribution were the selection criterion, A3 would again be the choice based on taxable income as the measure of fiscal capacity. The purpose of the exercises just described was not primarily to choose an allotment function but to demonstrate the implications for fiscal redistribution in Canada of the choice of allotment function and of the choice of fiscal capacity measure, given weighted population of school age as a proxy measure of fiscal need for elementary and secondary education. In addition, we used a constant having the value of .5, but this could be varied to provide more or less fiscal redistribution for the linear or parabolic functions. The hyperbolic function has no constant value (i.e. A2=1/C).

The conceptual framework and empirical results just described were used in assessing the total extent of fiscal redistribution and the patterns of allotment ratios per unit of need accomplished by federal direct spending and estimated indirect financial contributions to elementary and secondary education among the provinces. For comparative purposes it was also found useful to calculate the total extent of redistribution of all federal conditional and unconditional transfer payments to the provinces.

It was found that the total amount of fiscal redistribution from more able to less able provinces accomplished by total federal conditional and unconditional transfer payments in 1970 varied from 20.91 to 24.50 per cent of the total federal appropriation in that year depending on the measure of fiscal capacity (See Table 31, Section B). The major share of this redistribution was accomplished by unconditional, revenue sharing transfers. For example, based on taxable income as the measure of fiscal capacity, it was estimated that 49.95 per cent of unconditional transfers were redistributed in 1970 compared with 13.56 per cent of conditional transfers. Between 1960 and 1970, it was estimated that there had been only a slight increase in the total extent of fiscal redistribution accomplished by all federal transfer payments to provincial-local governments, that is, from 22.86 to 24.50 per cent based on taxable income as the measure of fiscal capacity.

In assessing the redistributive implications of federal financial contributions to elementary and secondary education it was necessary to distinguish between direct spending and indirect contributions. Only 3.6 per cent of direct government spending for elementary and secondary education in 1970 was made by the federal government. The major federal contribution consisted of those shares of federal unconditional transfer payments to the provinces which the provinces ultimately spent for elementary and secondary education either directly or through their local governments. It is impossible to identify precisely the final disposition by function of federal unconditional transfer payments. Since we were primarily interested in the redistributive aspects of the payments, for purposes of this dissertation we have assumed that responses with respect to the structure or patterns of spending were neutral rather than substitutive or stimulative; that is to say, it was assumed that federal unconditional fiscal transfers to the provinces increased provincial incomes but did not change the profile of provincial spending on services; that is to say, the pattern of expenditure as between education, roads, transportation etc. remained constant. Based on this assumption, it was estimated that $251 million of federal unconditional transfer payments or 23.9 per cent of total federal unconditional transfer payments in 1970 were spent for elementary and secondary education by provincial and local governments compared with $162 million of direct federal spending for elementary and secondary education. Thus, 61 per cent of the total federal contribution to elementary and secondary education in 1970 was indirect and 39 per cent was direct. The direct contribution was slightly higher in 1970 than in 1960 but considerably lower than in the mid-sixties (e.g. 54 per cent in 1965) when large capital grants were being made under the Technical Vocational Training Assistance Act.

It was estimated that the total federal direct and indirect contribution to elementary and secondary education made up 9 per cent of total government spending for elementary and secondary education in 1970; but the shares varied by region and province from 26.0 per cent in the Atlantic Region to 15.8 per cent in Quebec, 9.1 per cent in the Prairie Region, 3.3 per cent in British Columbia and 2.5 per cent in Ontario. Similarly, the division between direct and indirect contributions in the estimated total federal contribution to the financing of elementary and secondary education varied considerably among provinces. In the extreme cases, 98.8 per cent of the total estimated federal contribution in Newfoundland was indirect, whereas 91.6 per cent of the estimated total federal contribution in British Columbia was direct spending.

The extent of fiscal redistribution from more to less able provinces accomplished by the total federal contribution to elementary and secondary education in 1970 varied from 38.53 to 42.70 per cent of the total federal appropriation of $413 million, depending on which of the four measures of fiscal capacity was assumed as the basis of redistribution (See Table 31, Section C). The total federal contribution was made up of direct spending, of which between 27.86 and 31.45 per cent was redistributed and the estimated indirect contribution, of which between 45.43 and 51.83 per cent was redistributed from more able (C>1) to less able (C<1) provinces.

The pattern of provincial allotment ratios relative to fiscal capacity ratios based on direct spending was erratic and inconsistent with those based on any one of the three mathematical allotment alternatives (Figure 2). The Atlantic Region fared worse in this respect than Quebec, Manitoba or Saskatchewan, all of which had fiscal capacity ratios substantially higher than any Atlantic Province.

The most encouraging empirical finding in terms of allotment ratios was the high degree of redistribution of the estimated indirect federal contribution to elementary and secondary education (Figure 3). The major exception to this result was Newfoundland, whose allotment ratio per unit of educational need was less than those of Prince Edward Island, New Brunswick or Nova Scotia, all of which had fiscal capacity ratios higher than Newfoundland. This result was felt to be primarily due to the relatively greater educational needs of Newfoundland.

In terms of the total direct and estimated indirect federal contributions, all three provinces with fiscal capacity ratios greater than the national average, Ontario, British Columbia and Alberta, had allotment ratios below those which would prevail with the parabolic allotment function (A3), while the four provinces with the middle range of fiscal capacity ratios, Saskatchewan, Manitoba, Quebec and Nova Scotia, all had allotment ratios well above these levels (Figure 4). This situation brought about a greater amount of fiscal redistribution by the total federal contribution to elementary and secondary education than would have occurred if the funds had been distributed according to allotment function A3. The least consistent and, from the standpoint of fiscal redistribution, the least desirable result, was the fact that Newfoundland, New Brunswick and Prince Edward Island, the provinces with the lowest fiscal capacity ratios, had lower allotment ratios than one or more of the four provinces within the middle range of fiscal capacity ratios, listed above.

The federal form of government is a political compromise which permits national unity, and not a creation in which spending and taxing powers are likely to be allocated between sovereign levels of government on a rational economic basis. This dissertation has been concerned with two of the problems for which all federal governments, implicitly or explicitly, must find solutions: achieving aggregate fiscal balance between spending needs and revenue means; and enabling all provinces to achieve comparable standards of services without making financial efforts far in excess of those made by other provinces. The empirical exercises have been mainly concerned with the second of these problems as it relates to the financing of elementary and secondary education in Canada.

There are some important constraints imposed on the search for solutions to these problems in Canada which seem to have grown in importance in recent decades. The most important is our rigid constitution. In addition, there has been an increased sense of autonomy in the provincial governments. This trend was, in part, a reaction to the centralization of spending and taxing powers which occurred during the Second World War. A more important influence has been the expansion of spending responsibilities in the provincial domain, largely as a result of the rapid population growth of the later forties and fifties.

Finally, there has been an upsurge in French Canadian nationalism in Quebec which has spread to other provinces.

The rigid constitution and the ascendancy of the provinces have resulted in solutions to the above problems which are consistent with provincial desires to preserve and enhance their autonomy. Through numerous rounds of negotiations and successive agreements, we have witnessed a long succession of compromises by the federal government to accommodate provincial needs and aspirations in the interests of national unity.

From 1962 to 1971 the problem of dynamic imbalances between spending needs and revenue sources was met by means of successive abatements of federal taxing powers, primarily in the income tax field. It is difficult, perhaps impossible, to determine when fiscal balance has been accomplished. In the most recent federal-provincial fiscal agreement, concluded in 1972, the federal government attempted to establish that such a balance between spending needs and revenue sources had been accomplished. From then on, the federal government indicated it would view fiscal balance in marginal terms rather than in terms of the amounts of taxing power or fiscal resources that federal and provincial politicians feel they require to meet all of their perceived needs at a given time. In short, it would be assumed in future that each sovereign level of government had an equal need for additional revenue and that the political leaders at each level should be responsible to their respective electorates for any additional funds raised. What may be called the principles of fiscal balance and fiscal responsibility were neatly expressed by the Minister of Finance for Canada in September, 1966 and were embodied in Bill C-277 when a new tax-sharing arrangement was introduced to Parliament in 1967:

> First, the fiscal arrangements should give both the federal and provincial governments access to fiscal resources sufficient to discharge their responsibilities under the Constitution.
>
> Second, they should provide that each government should be accountable to its own electors for its taxing and spending decisions with due regard for their effect on other governments.

The major result for education of the enhanced fiscal power of the provinces resulting from successive federal abatements of taxing powers has been the substantial growth of spending for education in absolute terms and as a share of total government spending (Chapter V). Post-secondary and vocational education have been the major beneficiaries; but spending on elementary and secondary education has also grown rapidly at an estimated 13.0 per cent per year between 1954-55 and 1973-74. In addition, the provinces have, in varying degrees, relieved their local governments of some of the burden of supporting elementary and secondary education from the property tax.[97] In a sense, therefore, the provincial governments have acted as middlemen, channeling funds released by the federal government to finance a larger share of educational spending at the local level.

With regard to fiscal redistribution among the provinces, the stated objective of the federal government was expressed as the third guiding principle in the development of the 1967 federal-provincial tax-sharing arrangements:

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[97] Between 1960 and 1970 the provincial governments' share of spending on elementary and secondary education increased from 41 to 55 per cent. Statistics Canada, Education Division, Education in Canada, 1973 (Ottawa: Information Canada, 1973), Table 46, pp. 368-9.

> Third, the fiscal arrangements should, through a system of equalization grants, enable each province to provide an adequate level of public services without resort to rates of taxation substantially higher than those of other provinces.

As explained and documented in previous chapters, the federal government has pursued this objective by means of successive revenue equalization grants built on a widening tax base which now includes virtually all sources of provincial revenue. Moreover, in the federal budget introduced on February 19, 1973 the Minister of Finance for Canada announced that the revenue equalization formula would be expanded, effective April 1, 1973 to include local school taxes. The net effect of this measure is expected to be an additional transfer of funds to the seven less able provinces.

The redistributive impact of the revenue equalization grants, together with other minor unconditional subsidies was summarized earlier in this chapter under the heading of Unconditional Federal Transfers. Revenue equalization transfers were the major factor accounting for the relatively large amount of fiscal redistribution accomplished by total unconditional transfer payments. For example, in relation to the yield of a representative provincial tax system plus local taxation, 53.01 per cent of total federal unconditional transfers were redistributed from more to less able provinces in 1970 compared with 9.61 per cent for total federal conditional transfers (Table 31, Section B).

Of greatest significance for this investigation, the fiscal redistribution accomplished by estimated indirect federal contributions to elementary and secondary education was also due mainly to the redistributive effects of the revenue equalization grants. Direct federal spending for elementary and secondary education accomplished substantially less fiscal redistribution among provinces. Most of the estimated 38.5 to 42.7 per cent of total federal contributions to elementary and secondary education in 1970 which was redistributed from more to less prosperous provinces originated with the revenue equalization grants. Although there is no element of "fiscal need" with respect to elementary and secondary education built into the federal-provincial arrangements, it appears, nevertheless, that the revenue equalization grants accomplished a reasonable degree and amount of redistribution in relation to the simple measure of fiscal need and the alternative measures of fiscal capacity used in this study. However, as noted above, federal direct spending made up only 3.6 per cent of total spending for elementary and secondary education in 1970 and the addition of the estimated federal indirect contribution raised the estimated total contribution to only 9 per cent of total government spending on elementary and secondary education in that year.

To evaluate the total impact of the estimated federal contribution, it will be useful to examine total spending per pupil in each province with the estimated federal contribution excluded and also with it included. In Table 32, total expenditure for elementary and secondary education per pupil enrolled, by all levels of government, is compared with net provincial and local spending per pupil enrolled (i.e., after elimination of federal direct spending and estimated indirect contributions) for 1960, 1965 and 1970. In Table 33 these data are shown as indexes based on the national averages. In 1970 total government spending for elementary and secondary education varied from $913 in Ontario to $376 in Newfoundland or from 112 per cent to 46 per cent of the national average (i.e., $817). The coefficient of variation among the provincial values in 1970 was 22.4 per cent.

In addition to showing a very substantial increase in total spending per pupil over 1960 and 1965, the data for 1970 reveal a considerable narrowing of the interprovincial variations. For example, in 1960 total spending per pupil varied from $416 in Alberta to $139 in Newfoundland or from 132 to 44 per cent of the national average (i.e., $316). By province, the changes in index values relative to the national averages between 1960 and 1970 were as follows:

Quebec	+14.0	Nova Scotia	+ 0.2
Prince Edward Island	+12.7	Manitoba	-16.6
New Brunswick	+12.5	Alberta	-23.6
Ontario	+ 3.9	Saskatchewan	-23.6
Newfoundland	+ 2.0	British Columbia	-36.0

ATLANTIC REGION	+ 4.7
PRAIRIE REGION	-36.0

It should be noted, that the index values for four provinces appear to be diverging from the national average between 1965 and 1970. Ontario was farther above the national average in 1970 than in either 1960 or 1965. Manitoba, Saskatchewan and British Columbia, which were all above the national average in both 1960 and 1965 were all below it in 1970.

How does the exclusion of the estimated total federal contribution to elementary and secondary education affect interprovincial variations in spending for elementary and secondary education per pupil enrolled? The results of these deductions from total spending per pupil are shown in the last three columns of Tables 32 and 33. It was estimated that net provincial-local spending varied in 1970 from $890 per enrolled pupil in Ontario to $270 in Newfoundland or from 120 per cent to 36 per cent of the national average (i.e., $743). This compares with the range of 112 to 46 per cent of the national average (i.e., $817) when the estimated federal contribution was included in the calculations. In addition the coefficient of variation among provinces based on net provincial-local spending was 31.9 per cent compared with 22.4 per cent based on total government spending. Clearly, the estimated federal contribution resulted in some alleviation in interprovincial variations in spending per pupil in 1970. However, there are still substantial variations in spending per pupil. For example, in the province with the highest total government spending for elementary and secondary education in 1970, 2.43 times as much was spent per enrolled pupil as in the province with the lowest level of total spending, compared with 3.30 times as much when the estimated federal contribution was excluded.

In terms of changes in net provincial-local spending per pupil over the three years, the general pattern is similar to that which was found for total spending of all levels of government per pupil enrolled. That is to say, there was a substantial reduction in interprovincial variations between 1960 and 1965 and between 1965 and 1970. Between 1960 and 1970 the coefficient of variation decreased from 41.0 per cent to 31.9 per cent.

In general, the influence of the federal contribution to the reduction of interprovincial variations in spending per pupil did not change markedly over the three years. For example the reduction of the coefficients of variation resulting from the estimated total federal contribution in 1960, 1965 and 1970 were 8.1, 7.1 and 9.5 points, respectively.

By province, the changes in indexes based on the national averages, which resulted from the inclusion of the federal direct and indirect contributions in 1970, were as follows:

Prince Edward Island	+14.9	Saskatchewan	+ 4.7
New Brunswick	+14.5	Manitoba	+ 3.7
Nova Scotia	+12.5	Alberta	- 4.7
Newfoundland	+ 9.7	British Columbia	- 5.9
Quebec	+ 7.5	Ontario	- 8.0

ATLANTIC REGION	+12.5
PRAIRIE REGION	-

In summary, a relatively large proportion of the estimated federal contribution to elementary and secondary education was redistributed from more to less able provinces. However its relatively small share of total spending for elementary and secondary education (i.e., approximately 9 per cent in 1970) has limited the total impact of the federal contribution in reducing interprovincial differences in spending per pupil. In 1970 the most able province still spent nearly two-and-one-half times as much per enrolled pupil as the least able province.

National priorities arise because of spillovers of costs and/or benefits among provinces. Most national priorities in peacetime have arisen in the fields of health, education or welfare, which are in the provincial domain. In contrast with its principles concerning fiscal balance and fiscal responsibility, quoted above, the federal government has been unable to enunciate any unequivocal guideline governing its activities in these areas:

> . . . the fiscal arrangements should seek to provide machinery for harmonizing the policies and the priorities of the federal and provincial governments.

The federal strategy has been to assume a sort of flexible or temporary leadership by establishing incentive or shared-cost programs for new activities in these fields and then, following a period during which the programs become well established, offering to relinquish these responsibilities to the provinces. Three major conditional grant programs of this type are the Canada Assistance Plan for sharing with the provinces the costs of certain welfare services, Hospital Insurance and the Medical Care Program. The rationale for setting up these programs was the need to ensure basic national standards of health and welfare services. The federal contribution under these programs is equivalent to approximately half of the costs of the various provincial programs. The empirical exercises showed that these federal conditional transfer programs accomplish relatively little fiscal redistribution relative to needs as measured by total population (i.e. between 10 and 14 per cent of total federal spending, depending on the measure of fiscal capacity used to assess redistribution).

Once these programs become "well-established" the federal government would like to assume that they have sufficient popular support to ensure their continuation without direct federal involvement. It therefore proposed that the federal government withdraw from the programs by replacing the conditions and contributions it makes in return for tax points.[98]

The essential points are that when a national priority in a social service field has been identified, the federal government has, in the past, initiated a cost-sharing program. Once the program became "well established" it has indicated a preference for terminating direct financial assistance in exchange for tax points.

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[98] The federal government made its first "opting-out" proposal in 1964, renewed it in 1966 and 1968 and then withdrew it altogether in 1969 pending major tax reform. Only Quebec has accepted the opting-out concept.

Is it desirable or feasible for the federal government to provide the type of flexible leadership demonstrated in the health and welfare fields in the financing of elementary and secondary education? The rationale for such a step would have to be a need, national in scope, which is not adequately served at the provincial level. In the financing of elementary and secondary education, such a need might be to make the resources available for each child's education more closely a function of the fiscal capacity of the nation than of the province or community in which he happens to be located. There are several approaches which might be taken to promote such an objective at the federal level, in addition to the revenue equalization scheme presently in operation in respect of all provincial and local services. To be successful, any one of them would require an element of "fiscal need" payment and we have already noted some of the problems involved in developing an acceptable measure of fiscal need in education. For this reason and for a variety of well-known political and historical reasons, some of which have been referred to throughout this study, it is highly unlikely that any federal government will, in the near future, venture into the area of direct financial assistance to elementary and secondary education.

A more feasible possibility but one which is still some distance in the future might involve a federal initiative to induce reform of provincial-local fiscal relations. The growing importance of urban centres and the urgency of the problems some of them face in meeting their needs for social services, including education, may force some federal initiatives in this area. As was shown in Chapter V, most provinces still steadfastly refuse to grant their municipalities unconditional transfer payments or to engage in tax sharing arrangements, both of which they insist on in their own fiscal relations with the federal government. If the provincial governments are unable to develop a more flexible strategy for dealing with the fiscal and social problems of their municipalities, the federal government may perceive reform of local government as a national priority and adopt an incentive program to induce needed reforms in provinces which are slow to undertake them on their own initiative. The possibility of a comprehensive federal initiative toward municipal fiscal reform may, in the present political climate in Canada, provide the most feasible hope for some federal influence to improve the allocation of resources for education within provinces.

TABLE 31

SUMMARY OF THE EXTENT OF FISCAL REDISTRIBUTION AMONG PROVINCES ACCOMPLISHED BY ACTUAL AND HYPOTHETICAL FEDERAL ALLOTMENTS IN RELATION TO FOUR MEASURES OF FISCAL CAPACITY, 1970

	Measure of Fiscal Capacity			
Type of Allotment	Personal Income	Declared Income Over $2500	Taxable Income	Representative Provincial Tax System Plus Local Taxation
	(1)	(2)	(3)	(4)
A. Mathematical Allotment Functions				
Ao (no redistribution)	-	-	-	-
A1 (linear)	18.74	23.07	25.95	20.63
A2 (hyperbolic)	18.80	23.36	26.25	22.26
A3 (parabolic)	27.19	32.96	36.65	30.53
B. Total Federal Transfer Payments to Provincial and Local Governments				
Conditional	9.97	12.13	13.56	9.61
Unconditional	46.36	48.52	49.95	53.01
TOTAL	20.91	23.07	24.50	22.66
C. Federal Direct Spending and Estimated Indirect Contributions to Elementary and Secondary Education				
Direct	27.86	30.02	31.45	28.60
Indirect	45.43	47.59	49.02	51.83
TOTAL	38.53	40.69	42.12	42.70

Sources: Section A--Tables 21 to 24.
Section B--Conditional and Unconditional derived from Tables 27 and A-8. Total from Table 25. Col. 3 from Table 26.
Section C--Direct and Indirect derived from Table 27 and A-14. Total from Table 27. Col. 3 from Table 28.

TABLE 32

TOTAL GOVERNMENT EXPENDITURE FOR ELEMENTARY AND SECONDARY EDUCATION AND NET PROVINCIAL-LOCAL EXPENDITURE PER PUPIL ENROLLED,[a] BY PROVINCE, 1960, 1965 AND 1970

Province	Total Government Expenditure Per Pupil Enrolled			Net Provincial-Local Expenditure Per Pupil Enrolled[a]		
	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)
Newfoundland	$139	$184	$376	$ 87	$135	$270
Prince Edward Island	168	275	538	115	189	379
Nova Scotia	239	314	619	183	240	470
New Brunswick	197	282	611	154	216	448
ATLANTIC REGION	196	267	545	145	202	403
Quebec	271	481	815	248	425	686
Ontario	341	491	913	331	463	890
Manitoba	341	479	746	289	404	651
Saskatchewan	368	471	767	314	408	663
Alberta	416	520	882	377	472	837
PRAIRIE REGION	381	495	814	334	435	740
British Columbia	406	524	756	377	470	731
TEN PROVINCES	$316	$467	$817	$289	$419	$743
INDEX OF DISPERSION (%)[b]	32.9	29.4	22.4	41.0	36.5	31.9

TABLE 32 (continued)

[a] Total government expenditure on elementary and secondary education *less* federal direct and estimated indirect contribution.

[b] Consists of the coefficient of variation which is the standard deviation divided by the arithmetic mean, expressed as a percentage.

Sources: Col. (1) to (3)--Total government expenditure for elementary and secondary education from Appendix Table A-12, Col. (7) to (9).
Enrolments for 1960, 1965 and 1970 were estimated by averaging enrolments for 1959-60 and 1960-61, 1964-65 and 1965-66, and 1969-70 and 1970-71. Statistics Canada, Education Division, *Enrolment in Elementary and Secondary Schools in Canada, 1971-72* (Ottawa: Information Canada, 1973), Table 2.1, pages 34 and 35.

Col. (4) to (6)--Calculated using total government expenditure for elementary and secondary education (from above) *less* the federal direct and estimated indirect contribution to elementary and secondary education from Appendix Table A-13, Col. (7) to (9).
Enrolments from above.

TABLE 33

INDEXES OF TOTAL GOVERNMENT EXPENDITURE FOR ELEMENTARY AND SECONDARY EDUCATION AND NET PROVINCIAL-LOCAL EXPENDITURE PER PUPIL ENROLLED,[a] BY PROVINCE, 1960, 1965 AND 1970 (NATIONAL AVERAGE = 100.0)

Province	Total Government Expenditure Per Pupil Enrolled			Net Provincial-Local Expenditure Per Pupil Enrolled[a]		
	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)
Newfoundland	44.0	39.4	46.0	30.1	32.2	36.3
Prince Edward Island	53.2	58.9	65.9	39.8	45.1	51.0
Nova Scotia	75.6	67.2	75.8	63.3	57.3	63.3
New Brunswick	62.3	60.4	74.8	53.3	51.6	60.3
ATLANTIC REGION	62.0	57.2	66.7	50.2	48.2	54.2
Quebec	85.8	103.0	99.8	85.8	101.4	92.3
Ontario	107.9	105.1	111.8	114.5	110.5	119.8
Manitoba	107.9	102.6	91.3	100.0	96.4	87.6
Saskatchewan	116.5	100.9	93.9	108.7	97.4	89.2
Alberta	131.6	111.3	108.0	130.4	112.6	112.7
PRAIRIE REGION	120.6	106.0	99.6	115.6	103.8	99.6
British Columbia	128.5	112.2	92.5	130.4	112.2	98.4
TEN PROVINCES	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 33 (continued)

Province	Total Government Expenditure Per Pupil Enrolled 1960	1965	1970	Net Provincial-Local Expenditure Per Pupil Enrolled[a] 1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)
ACTUAL WEIGHTED AVERAGE ($)	316	467	817	289	419	743
COEFFICIENT OF DISPERSION (%)	32.9	29.4	22.4	41.0	36.5	31.9

[a] Total government expenditure on elementary and secondary education less federal direct spending and estimated indirect contribution.

Source: Derived from Table 32.

APPENDIX

TABLE A-1

ESTIMATES OF RELATIVE EDUCATIONAL NEEDS IN CANADA--ACTUAL VALUES BY PROVINCE, 1960, 1965 AND 1970

Province	Live Births As Percentages of 5-year-old population[a]			Weighted School-Age Children (5 to 19) Per 1000 of								
				Population			Labour Force			Tax Returns Over $2500[b]		
	1961	1966	1971	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Newfoundland	120.7	102.3	48.3	406	436	431	..	..	1505	4302	3411	2324
Prince Edward Island	117.0	81.2	48.6	365	383	387	..	..	1151	4760	3326	2035
Nova Scotia	112.6	85.7	46.7	348	373	368	..	..	1102	2453	2100	1468
New Brunswick	109.3	83.7	47.5	385	410	401	..	..	1181	3092	2481	2904
ATLANTIC REGION	114.0	89.5	47.5	374	401	395	1271	1290	1223	3085	2537	1757
Quebec	106.9	80.3	40.0	350	369	373	998	1038	963	1997	1632	1321
Ontario	112.8	82.5	46.7	299	331	347	769	860	837	1130	1088	975
Manitoba	111.9	83.2	49.6	317	342	353	..	..	913	1558	1695	1205
Saskatchewan	109.7	85.7	45.6	333	360	374	..	..	1007	2092	1977	1625
Alberta	116.5	82.9	49.0	322	355	375	..	..	919	1566	1741	1254
PRAIRIE REGION	113.3	83.8	48.3	324	353	368	905	967	940	1692	1789	1322
British Columbia	108.5	79.8	48.1	292	326	338	829	880	818	1148	1222	1003
TOTAL	110.9%	82.6%	45.3%	325	352	362	905	967	917	1548	1789	1174
INDEX OF DISPERSION (%)[c]	3.7	7.3	9.3	10.7	9.3	7.3	20.6	17.2	16.9	52.7	38.4	38.9

TABLE A-1 (continued)

[a] Population by single years of age are available for Census years only. Hence, data are shown for 1961, 1966 and 1971 instead of 1960, 1965 and 1970.

[b] To obtain approximately equivalent purchasing power in earlier years, $2500 in 1970 was deflated using the Consumer Price Index. Thus, the calculations for 1960 and 1965 were based on tax returns over $1946 and $2070, respectively.

[c] The index of dispersion used in this and subsequent tables is the coefficient of variation which is the standard deviation divided by the arithmetic mean, expressed as a percentage. The percentages shown relate to the values shown for the ten provinces.

Sources: Five-year-old population from Statistics Canada, Census Division, 1961 Census of Canada. Population. Single Years of Age. (Ottawa: Queen's Printer, 1962) and corresponding reports for 1966 and 1971 data.

Live births, total population and school-age population from Statistics Canada, Health and Welfare Division, Vital Statistics (annual); labour force from Canadian Labour Force Survey as published in Statistics Canada, Education in Canada, 1973, Table 5, pp. 216-21; tax returns over $2500 from Canada Department of National Revenue, Taxation Statistics (annual).

TABLE A-2

THREE MEASURES OF RELATIVE FISCAL CAPACITY, BY PROVINCE, 1960, 1965 AND 1970 (ACTUAL)

Province	Dollars Per Capita of								
	Personal Income			Total Declared Income Over $2500[a]			Taxable Income		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	$ 920	$1238	$1996	..	$ 636	$1145	$204	$ 331	$ 730
Prince Edward Island	942	1257	2082	..	542	1042	158	294	675
Nova Scotia	1265	1562	2435	..	868	1567	300	473	1041
New Brunswick	1127	1431	2260	..	793	1381	253	426	895
ATLANTIC REGION	1121	1424	2250		769	1374	254	413	897
Quebec	1443	1880	2783	..	1208	1939	421	704	1342
Ontario	1951	2436	3691	..	1713	2702	726	1078	1980
Manitoba	1647	1961	2903	..	1183	1955	496	690	1369
Saskatchewan	1478	1883	2257	..	1088	1414	367	628	944
Alberta	1653	2028	3115	..	1239	2124	531	749	1514
PRAIRIE REGION	1600	1968	2827		1180	1887	473	698	1321
British Columbia	1909	2377	3377	..	1693	2522	694	1062	1827
TOTAL	$1653	$2087	$3122		$1378	$2206	$541	$ 836	$1571
INDEX OF DISPERSION (%)	25.7	23.6	21.5		59.0	31.7	47.3	42.6	36.5

[a] See footnote b to Table A-1.

Sources: Personal income from Statistics Canada, National Accounts, Income and Expenditure (revised); total declared income and taxable income from Canada Department of National Revenue, Taxation Statistics (annual).

TABLE A-3

THREE MEASURES OF RELATIVE ABILITY TO FINANCE EDUCATIONAL NEEDS IN CANADA--BY PROVINCE, 1960, 1965 AND 1970 (ACTUAL)

Province	Dollars Per Weighted School-Age Child (5 to 19) of								
	Personal Income			Total Declared Income Over $2500[a]			Taxable Income		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	$2264	$2840	$ 4634	..	$1458	$2608	$ 503	$ 760	$1695
Prince Edward Island	2580	3285	5376	..	1416	2687	434	769	1743
Nova Scotia	3638	4188	6618	..	2328	4260	861	1268	2829
New Brunswick	2930	3492	5634	..	1935	3443	658	1039	2232
ATLANTIC REGION	2994	3554	5695		1920	3478	679	1031	2271
Quebec	4126	5089	7467	..	3272	5201	1203	1906	3599
Ontario	6522	7360	10634	..	5175	7785	2426	3256	5703
Manitoba	5188	5726	8230	..	3455	5541	1562	2015	3881
Saskatchewan	4433	5229	6029	..	3022	3778	1102	1744	2522
Alberta	5127	5713	8316	..	3490	5669	1647	2110	4041
PRAIRIE REGION	4935	5577	7672		3346	5121	1458	1978	3585
British Columbia	6531	7286	10002	..	5189	7468	2376	3256	5410
TOTAL	$5079	$5923	$ 8634		$3912	$6101	$1664	$2372	$4345
INDEX OF DISPERSION (%)	35.1	31.4	27.4		44.0	37.6	56.3	50.0	42.2

[a] See footnote b to Table A-1.

Sources: The same as for Tables A-1 and A-2.

TABLE A-4

(A) RELATIVE FISCAL CAPACITIES OF THE PROVINCES AND (B) RELATIVE ABILITIES OF THE PROVINCES TO FINANCE EDUCATION BASED ON THE YIELDS OF A REPRESENTATIVE TAX SYSTEM[a] PLUS LOCAL TAXATION--ACTUAL VALUES BY PROVINCE 1967 and 1970

Province	A. Relative Fiscal Capacity (Per Capita)		B. Relative Ability to Finance Educational Needs (Per Weighted School-Age Child)	
	1967	1970	1967	1970
	(1)	(2)	(3)	(4)
Newfoundland	$167	$270	$ 386	$ 627
Prince Edward Island	217	302	558	780
Nova Scotia	262	396	698	1076
New Brunswick	195	313	482	781
ATLANTIC REGION	215	333	537	844
Quebec	366	522	979	1401
Ontario	473	688	1387	1982
Manitoba	356	560	1007	1519
Saskatchewan	417	552	1135	1541
Alberta	547	745	1487	1988
PRAIRIE REGION	456	642	1256	1741
British Columbia	488	681	1457	2015
TOTAL	$416	$599	$1157	$1656
INDEX OF DISPERSION (%)	38.3	34.6	43.0	38.9

[a] Consists of the yield of 16 provincial revenue sources when national average rates are applied to provincial bases.

Sources: Yields of 16 provincial revenue sources at national average rates from Canadian Tax Foundation, *The National Finances* (annual) (original source: Canada Department of Finance); local taxation from Statistics Canada, *Local Government Finance, 1967 (actual)*, Table 1, pp. 14-15 and *Local Government Finance, 1970 and 1971 (Preliminary 1970, Estimates 1971)*, Table 1, pp. 14-16.

TABLE A 5

ALLOTMENT RATIOS PER UNIT OF EDUCATIONAL NEED (I.E. PER WEIGHTED CHILD AGED 5 TO 19) WHICH DETERMINE PROVINCIAL SHARES USING THREE MATHEMATICAL FORMS OF REDISTRIBUTIVE ALLOTMENT FUNCTION APPLIED TO FOUR MEASURES OF RELATIVE ABILITY TO FINANCE EDUCATION, 1970

Province	Based on Dollars Per Weighted School-Age Child (5 to 19) of							
	Personal Income				Total Declared Income Over $2500			
	Ao=C	A1	A2	A3	Ao=C	A1	A2	A3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Newfoundland	0.537	0.732	1.862	0.535	0.427	0.787	2.342	0.619
Prince Edward Island	0.623	0.689	1.605	0.474	0.440	0.780	2.273	0.608
Nova Scotia	0.767	0.617	1.304	0.380	0.698	0.651	1.433	0.424
New Brunswick	0.653	0.674	1.531	0.454	0.564	0.718	1.773	0.516
Quebec	0.865	0.568	1.156	0.322	0.852	0.574	1.174	0.329
Ontario	1.232	0.384	0.812	0.147	1.276	0.362	0.784	0.131
Manitoba	0.953	0.524	1.049	0.274	0.908	0.546	1.101	0.298
Saskatchewan	0.698	0.651	1.433	0.424	0.619	0.691	1.616	0.477
Alberta	0.963	0.519	1.038	0.269	0.929	0.536	1.076	0.287
British Columbia	1.158	0.421	0.864	0.177	1.224	0.388	0.817	0.151
National Average	1.000	0.500	1.000	0.250	1.000	0.500	1.000	0.250

TABLE A-5 (continued)

Province	Based on Dollars Per Weighted School-Age Child (5 to 19) of Taxable Income Ao=C	Taxable Income A1	Taxable Income A2	Taxable Income A3	Yield of a Representative Provincial Tax System Plus Local Taxation Ao=C	Yield ... A1	Yield ... A2	Yield ... A3
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Newfoundland	0.390	0.805	2.564	0.648	0.379	0.811	2.639	0.657
Prince Edward Island	0.401	0.800	2.494	0.639	0.471	0.765	2.123	0.585
Nova Scotia	0.651	0.675	1.536	0.455	0.650	0.675	1.538	0.456
New Brunswick	0.514	0.743	1.946	0.552	0.472	0.764	2.119	0.584
Quebec	0.828	0.586	1.208	0.343	0.846	0.577	1.182	0.333
Ontario	1.313	0.344	0.762	0.118	1.197	0.402	0.835	0.161
Manitoba	0.893	0.554	1.120	0.306	0.917	0.542	1.091	0.292
Saskatchewan	0.580	0.710	1.724	0.504	0.931	0.535	1.074	0.286
Alberta	0.930	0.535	1.075	0.286	1.200	0.400	0.833	0.160
British Columbia	1.245	0.378	0.803	0.143	1.217	0.392	0.822	0.153
National Average	1.000	0.500	1.000	0.250	1.000	0.500	1.000	0.250

TABLE A-5 (continued)

Note: The mathematical forms of the three allotment ratios which determine provincial shares:

$A1 = (1 - .5C)$ a linear expression

$A2 = 1/C$ a rectangular hyperbola

$A3 = (1 - .5C)$ a parabola.

Where A is the ratio of a province's federal receipts per unit of need to the average federal receipt per unit of need for all provinces and C is the ratio of a province's fiscal capacity per unit of need to the average fiscal capacity per unit of need of all provinces. It follows that where $A = C$ there is no fiscal redistribution (A_o).

Source: The values of C for each of the four measures of fiscal capacity per unit of need were derived Appendix Tables A-3 and A-4.

TABLE A-6

REDISTRIBUTIVE IMPACT OF THREE ALLOTMENT FORMULAS ON PROVINCIAL SHARES OF A FEDERAL APPROPRIATION: EXAMPLE BASED ON TAXABLE INCOME PER WEIGHTED CHILD OF SCHOOL AGE, 1960

Province	Shares of Total Appropriation				Changes in Shares		
	So (No Redistribution)	S1	S2	S3	S1 (2)-(1)	S2 (3)-(1)	S3 (4)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Newfoundland	0.95	5.34	8.53	7.83	4.39	7.58	6.88
Prince Edward Island	0.17	1.14	2.04	1.67	0.97	1.87	1.50
Nova Scotia	2.24	6.48	6.92	8.31	4.24	4.68	6.07
New Brunswick	1.55	6.27	8.12	8.73	4.72	6.57	7.18
ATLANTIC REGION	4.91	19.23	25.61	26.54	14.32	20.70	21.63
Quebec	22.42	39.59	35.21	43.87	17.17	12.79	21.45
Ontario	45.93	17.06	17.75	7.95	-28.87	-28.18	-37.98
Manitoba	4.65	5.24	4.33	4.84	0.59	- 0.32	0.19
Saskatchewan	3.48	7.02	6.52	8.19	3.54	3.04	4.71
Alberta	7.10	7.24	5.94	6.34	0.14	- 1.16	- 0.76
PRAIRIE REGION	15.23	19.50	16.79	19.37	4.27	1.56	4.14
British Columbia	11.51	4.62	4.64	2.27	- 6.89	- 6.87	- 9.24
TOTAL	100.00	100.00	100.00	100.00	-	-	-
EXTENT OF REDISTRIBUTION	-	...	...	...	35.76%	35.05%	47.22%

See Table 21 for explanatory notes and sources.

TABLE A-7

TOTAL UNCONDITIONAL AND CONDITIONAL (SPECIAL PURPOSE) TRANSFERS FROM THE FEDERAL GOVERNMENT TO PROVINCIAL AND LOCAL GOVERNMENTS, SELECTED FISCAL YEARS ENDING NEAREST TO DECEMBER 31, 1960 TO 1970

Province	Total Unconditional Transfers ($000)				Total Conditional Transfers[a] ($000)			
	1960-61	1965-66	1967-68	1970-71[e]	1960-61	1965-66	1967-68	1970-71[e]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Newfoundland	32800	43984	79095	101623	18878	50990	64190	115588
Prince Edward Island	6948	10518	15138	22879	5176	8168	12677	27574
Nova Scotia	33209	53247	88247	100217	24135	42372	85698	117496
New Brunswick	29499	48186	71568	85532	23215	43883	66214	114032
ATLANTIC REGION	102456	155935	254048	310251	71404	145413	228779	374690
Quebec[a]	78969	138873	252049	553738	71028	204112	345285	550302
Ontario	16756	39888	47463	63266	157658	312296	503850	838325
Manitoba	17342	32901	51864	49951	26239	50975	85954	132917
Saskatchewan	26858	32305	33095	47418	26835	47778	80148	115637
Alberta	23260	13981	17410	21770	32065	75433	124174	222073
PRAIRIE REGION	67460	79187	102369	119139	85139	174186	290276	470627
British Columbia	11868	5495	5056	4979	65543	100118	129610	209459
TOTAL	277509	419378	660985	1051373	450772	936125	1497791	2443403

TABLE A-7 (continued)

Province	Total Transfer Payments ($000)				Per Capita of Population ($)			
	1960-61	1965-66	1967-68	1970-71[e]	1960-61	1965-66	1967-68	1970-71[e]
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Newfoundland	51678	94974	143285	217211	115	195	287	420
Prince Edward Island	12124	18686	27815	50453	118	171	255	459
Nova Scotia	57344	95619	173945	217713	79	126	230	278
New Brunswick	52714	92069	137782	199564	89	150	222	318
ATLANTIC REGION	173860	301348	482827	684941	93	153	243	336
Quebec	149997	342985	597334	1104040	29	60	102	184
Ontario	174414	352184	551313	901591	29	52	77	119
Manitoba	43581	83876	137818	182868	48	87	143	186
Saskatchewan	53693	80083	113243	163055	59	84	139	173
Alberta	55325	89414	141584	243843	43	62	95	153
PRAIRIE REGION	152599	253373	392645	589766	49	75	115	168
British Columbia	77411	105613	134657	214438	48	59	69	101
TOTAL	728281	1355503	2158776	3494776	41	69	106	164

TABLE A-7 (continued)

[a]Quebec has opted out of several federal-provincial shared-cost programs under the Established Program (Interim Arrangements) Act and collects additional income taxes which correspond approximately to the federal contributions to shared-cost programs in other provinces. Although the yield of the additional income taxes received by Quebec are, strictly speaking, unconditional transfers, and are shown as such in the Public Accounts, we have shown them as "conditional" transfers to facilitate interprovincial comparability. The amounts involved were as follows: 1965-66--$81 million; 1967-68--$153 million and 1970-71--$215 million.

[e]denotes estimates

Sources: 1960-61 and 1965-66: Derived from Dominion Bureau of Statistics, Financial Statistics of Provincial Governments and Financial Statistics of Municipal Governments (appropriate years).
1967-68: Dominion Bureau of Statistics, Consolidated Government Finance, 1967, Table 6, pp. 12-13.
1970-71: Estimated from Provincial Government Finance (Estimates, 1970) and Local Government Finance (Preliminary 1970, Estimates 1971).

TABLE A-8

SHARES OF FEDERAL CONDITIONAL AND UNCONDITIONAL TRANSFER PAYMENTS TO PROVINCIAL AND LOCAL GOVERNMENTS COMPARED TO SHARES OF TOTAL TAXABLE INCOME, 1960, 1965 AND 1970 (PERCENTAGES)

Province	Shares of Total Taxable Income			Shares of Federal Transfer Payments to Provincial and Local Governments								
				Conditional			Unconditional			Total		
	1960	1965	1970e	1960	1965	1970e	1960	1965	1970e	1960	1965	1970e
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Newfoundland	0.95	0.99	1.13	4.19	5.45	4.73	11.82	10.49	9.66	7.10	7.01	6.22
Prince Edward Island	0.17	0.20	0.22	1.15	0.87	1.13	2.50	2.51	2.18	1.66	1.38	1.44
Nova Scotia	2.26	2.18	2.43	5.35	4.53	4.81	11.97	12.70	9.53	7.87	7.05	6.23
New Brunswick	1.54	1.60	1.68	5.15	4.69	4.67	10.63	11.49	8.13	7.24	6.97	5.71
ATLANTIC REGION	4.92	4.97	5.46	15.84	15.54	15.34	36.92	37.19	29.50	23.87	22.23	19.60
Quebec	22.41	24.41	24.16	15.76	21.80	22.52	28.45	33.11	52.67	20.60	25.30	31.58
Ontario	45.92	44.64	44.79	34.98	33.36	34.31	6.04	9.51	6.02	23.95	25.98	25.80
Manitoba	4.65	4.06	4.04	5.82	5.45	5.44	6.25	7.85	4.75	5.98	6.19	5.23
Saskatchewan	3.48	3.64	2.66	5.95	5.10	4.73	9.68	7.70	4.51	7.37	5.91	4.67
Alberta	7.10	6.63	7.24	7.11	8.06	9.09	8.38	3.33	2.06	7.60	6.60	6.98
PRAIRIE REGION	15.23	14.33	13.94	18.88	18.61	19.26	24.31	18.88	11.34	20.95	18.70	16.88
British Columbia	11.52	11.65	11.65	14.54	10.69	8.57	4.28	1.31	0.47	10.63	7.79	6.14
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Shares of taxable income from Canada Department of National Revenue, Taxation Statistics (annual). Shares of federal transfer payments derived from Table A-7.

TABLE A-9

CONSOLIDATED REVENUE OF PROVINCIAL-LOCAL GOVERNMENTS,[a] FOR SELECTED FISCAL YEARS ENDING NEAREST TO DECEMBER 31, 1960 TO 1970

Province	Consolidated Provincial-Local Revenue ($000) 1960-61	 1965-66	 1967-68	 1970-71e
	(1)	(2)	(3)	(4)
Newfoundland	90796	172189	241722	363272
Prince Edward Island	24638	37235	51903	84416
Nova Scotia	162120	252237	370390	516557
New Brunswick	147637	219119	296078	437494
ATLANTIC REGION	425191	680780	960093	1401739
Quebec	1129747	2032226	3314665	4878651
Ontario	1682197	2898247	4203678	6531210
Manitoba	221190	366991	521888	742971
Saskatchewan	290119	443358	567645	729598
Alberta	435375	736683	889896	1327299
PRAIRIE REGION	946684	1547032	1979429	2799868
British Columbia	545612	891667	1146442	1693446
TOTAL	4729431	8049952	11604307	17304914

[a] Excludes all provincial-local transfers but includes all federal-provincial and federal-local transfers.

Sources: Statistics Canada, Consolidated Government Finance (annual) for 1965-66 and 1967-68. Comparable data for 1960-61 were derived from Dominion Bureau of Statistics, Financial Statistics of Provincial Governments, 1960 and Financial Statistics of Municipal Governments, 1960 by elimination of provincial-local transfers; estimates for 1970-71 were derived from Statistics Canada, Provincial Government Finance, Revenue and Expenditure (Estimates) 1970 and Local Government Finance, Revenue and Expenditure (Preliminary 1970, Estimates 1971) by elimination of provincial-local transfers.

TABLE A-10

UNCONDITIONAL FISCAL TRANSFERS FROM THE FEDERAL GOVERNMENT TO PROVINCIAL AND LOCAL GOVERNMENTS SHOWN AS PERCENTAGES OF CONSOLIDATED PROVINCIAL-LOCAL REVENUE, BY PROVINCE, 1960-61 TO 1970-71

Province	1960-61	1965-66	1967-68	1970-71^e
	(1)	(2)	(3)	(4)
Newfoundland	36.12	25.54	32.72	27.97
Prince Edward Island	28.20	28.25	29.17	27.10
Nova Scotia	20.48	21.11	23.83	19.40
New Brunswick	19.98	21.99	24.17	19.55
ATLANTIC REGION	24.10	22.91	26.46	22.13
Quebec	6.99	6.83	7.60	11.35
Ontario	1.00	1.38	1.13	0.97
Manitoba	7.84	8.97	9.94	6.72
Saskatchewan	9.26	7.29	5.83	6.50
Alberta	5.34	1.90	1.96	1.64
PRAIRIE REGION	7.13	5.12	5.17	4.26
British Columbia	2.18	0.62	0.44	0.29
TOTAL	5.87	5.21	5.70	6.08

Source: Derived from Appendix Tables A-7 and A-9.

TABLE A-11

TOTAL FEDERAL TRANSFER PAYMENTS (CONDITIONAL AND UNCONDITIONAL) TO PROVINCIAL AND LOCAL GOVERNMENTS SHOWN AS PERCENTAGES OF CONSOLIDATED PROVINCIAL-LOCAL REVENUE, BY PROVINCE, 1960-61 TO 1970-71

Province	1960-61 (1)	1965-66 (2)	1967-68 (3)	1970-71[e] (4)
Newfoundland	56.92	55.16	59.28	59.79
Prince Edward Island	49.21	50.18	53.59	59.77
Nova Scotia	35.37	37.91	46.96	42.15
New Brunswick	35.71	42.02	46.54	45.62
ATLANTIC REGION	40.89	44.27	50.29	48.86
Quebec	13.28	16.88	18.02	22.63
Ontario	10.37	12.15	13.12	13.80
Manitoba	19.70	22.86	26.41	24.61
Saskatchewan	18.51	18.06	19.95	22.35
Alberta	12.71	12.14	15.91	18.37
PRAIRIE REGION	16.12	16.38	19.84	21.06
British Columbia	14.19	11.84	11.75	12.66
TOTAL	15.40	16.84	18.60	20.20

Sources: Derived from Appendix Tables A-7 and A-9.

TABLE A-12

TOTAL GOVERNMENT EXPENDITURES ON ELEMENTARY AND SECONDARY EDUCATION BY SOURCE OF FUNDS ($000)

Province	Provincial-Local			Federal			Total Government		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	17296	26420	60192	338	269	200	17634	26689	60392
Prince Edward Island	3890	7317	15656	189	305	526	4079	7622	16182
Nova Scotia	40921	60534	124846	1673	1860	7529	42594	62394	132375
New Brunswick	28832	45551	97298	734	902	9577	29566	46453	106875
ATLANTIC REGION	90939	139822	297992	2934	3336	17832	93873	143158	315824
Quebec	284963	619501	1222751	4613	32826	64782	289576	652327	1287533
Ontario	452933	800911	1802389	9155	36405	28519	462088	837316	1830908
Manitoba	57729	97780	171925	4981	7884	11877	62710	105664	183802
Saskatchewan	71066	103835	176387	4461	7210	14344	75527	111045	190731
Alberta	113986	171416	356261	5036	14025	12969	119022	185441	369230
PRAIRIE REGION	242781	373031	704573	14478	29119	39190	257259	402150	743763
British Columbia	120884	194057	381245	6604	20997	12044	127488	215054	393289
TOTAL	1192500	2127322	4408950	37784	122683	162367	1230284	2250005	4571317

Source: Derived from Statistics Canada, Education in Canada, 1973, Table 46, pp. 368-9.

TABLE E-13

ESTIMATED FEDERAL DIRECT AND INDIRECT FINANCIAL CONTRIBUTION TO ELEMENTARY AND SECONDARY EDUCATION, BY PROVINCE, SELECTED YEARS 1960 TO 1970 ($000)

Province	Federal Direct Spending			Estimated Federal Indirect Contribution[a]			Estimated Total Federal Contribution		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	338	269	200	6247	6748	16836	6585	7017	17036
Prince Edward Island	189	305	526	1097	2067	4243	1286	2372	4769
Nova Scotia	1673	1860	7529	8381	12779	24220	10054	14639	31749
New Brunswick	734	902	9577	5761	10017	19022	6495	10919	28599
ATLANTIC REGION	2934	3336	17832	21486	31611	64321	24420	34947	82153
Quebec	4613	32826	64732	19919	42312	138782	24532	75138	203564
Ontario	9155	36405	28519	4529	11053	17483	13684	47458	46002
Manitoba	4981	7884	11877	4526	8771	11553	9507	16655	23430
Saskatchewan	4461	7210	14344	6581	7570	11465	11042	14780	25809
Alberta	5036	14025	12969	6087	3257	5843	11123	17282	18812
PRAIRIE REGION	14478	29119	39190	17194	19598	28861	31672	48717	68051
British Columbia	6604	20997	12044	2635	1203	1106	9239	22200	13150
TOTAL	37784	122683	162367	65763	105777	250553	103547	228460	412920

TABLE A-13 (continued)

[a]Based on the assumption that, if a given percentage of provincial-local consolidated revenue consisted of unconditional (non-earmarked) federal transfer payments, then a similar percentage of provincial-local spending for elementary and secondary education was derived from federal unconditional transfer payments (i.e. the federal funds created no substitution or stimulation effect in provincial spending priorities). See text of Chapter VI for further explanation.

Sources: Federal direct spending and provincial-local spending for elementary and secondary education derived from Statistics Canada, Education in Canada, 1973, Table 46, pp. 368-9; estimated federal indirect contribution derived from Table A-10 and Table A-12, Columns (1) to (3).

TABLE A-14

SHARES OF FEDERAL DIRECT SPENDING AND ESTIMATED INDIRECT CONTRIBUTION TO ELEMENTARY AND SECONDARY EDUCATION, 1960, 1965 AND 1970 (PERCENTAGES)

Province	Federal Direct Spending			Estimated Indirect Federal Contribution			Estimated Total Federal Contribution		
	1960	1965	1970	1960	1965	1970	1960	1965	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Newfoundland	0.89	0.22	0.12	9.50	6.38	6.72	6.36	3.07	4.13
Prince Edward Island	0.50	0.25	0.32	1.67	1.95	1.69	1.24	1.04	1.15
Nova Scotia	4.43	1.52	4.64	12.74	12.08	9.67	9.71	6.41	7.69
New Brunswick	1.94	0.74	5.90	8.76	9.47	7.59	6.27	4.78	6.93
ATLANTIC REGION	7.76	2.73	10.98	32.67	29.88	25.67	23.58	15.30	19.90
Quebec	12.21	26.76	39.90	30.28	40.00	55.39	23.70	32.89	49.30
Ontario	24.23	29.66	17.57	6.89	10.45	6.98	13.22	20.77	11.14
Manitoba	13.18	6.43	7.31	6.88	8.29	4.61	9.18	7.29	5.67
Saskatchewan	11.81	5.88	8.83	10.01	7.16	4.58	10.66	6.47	6.25
Alberta	13.33	11.43	7.99	9.26	3.08	2.33	10.74	7.56	4.56
PRAIRIE REGION	38.32	23.74	24.13	26.15	18.53	11.52	30.58	21.32	16.48
British Columbia	17.48	17.11	7.42	4.01	1.14	0.44	8.92	9.72	3.18
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Derived from Table A-13.

REFERENCES AND

SELECTED BIBLIOGRAPHY

Books and Pamphlets

Benson, Charles S. *Perspectives on the Economics of Education.* Boston: Houghton Mifflin Company, 1963.

Bird, Richard M. *Taxes and Tax Reform.* Number 5 in the policy paper Series published by the Institute for the Quantitative Analysis of Social and Economic Policy, University of Toronto, 1969. 47 p.

Break, George J. *Intergovernmental Fiscal Relations in the United States.* Washington: Brookings Institution, 1967.

Burkhead, Jesse. *Public School Finance - Economics and Politics.* Syracuse, New York: Syracuse University Press, 1964.

Burkhead, Jesse and Jerry Miner. *Public Expenditure.* Chicago: Aldine Publishing Company, 1971. 346 p.

Canadian Tax Foundation. *The Allocation of Taxing Power Under The Canadian Constitution.* Gerard V. La Forest. Tax Paper No. 46. Toronto: The Foundation, 1967.

Canadian Tax Foundation. *Comparing Provincial Revenue Yields.* By James H. Lynn. Canadian Tax Papers No. 47. Toronto: The Foundation, 1968. 80 p.

Canadian Tax Foundation. *Conditional Grants and Canadian Federalism.* By Donald V. Smiley. Canadian Tax Papers No. 32. Toronto: The Foundation, February, 1963. 72 p.

Canadian Tax Foundation. *Financing Canadian Federation.* By A. Milton Moore and J. Harvey Perry. Toronto: The Foundation, 1953.

Canadian Tax Foundation. *Fiscal Need and Revenue Equalization Grants.* By Douglas H. Clark. Canadian Tax Papers No. 49. Toronto: The Foundation, 1969. 56 p.

Canadian Tax Foundation. *Fiscal Needs of the Canadian Provinces.* By Eric J. Hanson. Canadian Tax Papers No. 23. Toronto: The Foundation, 1961.

Canadian Tax Foundation. *The Growth of Government Spending in Canada.* By Richard M. Bird. Canadian Tax Papers, No. 51. Toronto: The Foundation, July 1970. 333 p.

Canadian Tax Foundation. *Inter-Government Fiscal Relationships.* By John F. Graham, A.W. Johnson and J.M. Andrews. Canadian Tax Papers No. 40. Toronto: The Foundation, 1964. 77 p.

Canadian Teachers' Federation. Education Finance in Canada. By Wilfred J. Brown. Ottawa: The Federation, 1970. 93 p.

Canadian Teachers' Federation. New Federal-Provincial Tax-Sharing Arrangements and Their Significance. By Wilfred J. Brown. CTF Monograph I. Ottawa: The Federation, 1967. 15 p.

Cheal, John E. Investment in Canadian Youth. Toronto: Macmillan Company, 1963.

Cousin, J., J.P. Fortin and C.J. Wenaas. Some Economic Aspects of Provincial Educational Systems. Staff Study No. 27. Ottawa: Information Canada, 1971. 232 p.

Handa, M.L. Manipulating Educational Expenditure: Dilemmas of the '70s. Excerpt (summary and conclusions) from Towards A Rational Educational Policy, an econometric analysis of Ontario, Canada, 1950-65 with tests 1966-68 and projections 1969-75. Monograph Series/13. Toronto: The Ontario Institute for Studies in Education, 1972. 25 p.

Lynn, James H. Federal-Provincial Fiscal Relations. Study No. 23 of the Royal Commission on Taxation. Ottawa: Queen's Printer, 1967. 224 p.

Maxwell, James Ackley. Financing State and Local Governments. Washington, D.C.: Brookings Institution, 1965. 276 p.

Maxwell, James Ackley. Tax Credits and Intergovernmental Fiscal Relations. Washington, D.C.: Brookings Institution, 1962. 202 p.

Moffat, H.P. Educational Finance in Canada. (Quance Lectures) Toronto: W.J. Gage Limited, 1957.

Musgrave, Richard A. (Ed.) Essays in Fiscal Federalism: Studies of Government Finance. Washington, D.C.: The Brookings Institution, 1965. 301 p.

Musgrave, Richard A. Fiscal Systems. New Haven: Yale University Press, 1969. 397 p.

Musgrave, Richard A. The Theory of Public Finance: A Study in Public Economy. Toronto: McGraw-Hill Book Company, 1959. 627 p.

Mushkin, Selma J., and John F. Cotton. Sharing Federal Funds for State and Local Needs: Grants-in-aid and PPB Systems. New York: Praeger Publishers, 1969. 207 p.

Ontario Institute for Studies in Education. Concerning the Growth of Provincial Expenditures in Ontario, 1938-1966. By C. Selby-Smith and M. Skolnik, OISE Occasional Paper No. 3. Toronto, 1970.

Stevenson, Hugh A., Robert M. Stamp and Donald J. Wilson. The Best of Times/ The Worst of Times. Contemporary Issues in Canadian Education. Toronto: Holt, Rinehart and Winston of Canada Ltd., 1972. 586 p.

Tiedt, Sidney W. The Role of the Federal Government in Education. New York: Oxford University Press, 1966.

Weisbrod, Burton A. External Benefits of Public Education: An Economic Analysis. Princeton, N.J.: Princeton University, 1964.

Articles and Papers

Bhargava, R.N. "The Theory of Federal Finance." Economic Journal, (March, 1953), pp. 84-97.

Break, George F. "Revenue-Sharing: Priorities and Policy Instruments." Journal of Finance, (May, 1968), pp. 251-65.

Breton, Albert. "A Theory of Government Grants." The Canadian Journal of Economics and Political Science, (May, 1965), pp. 178-87.

Buchanan, James M. "Federal Grants and Resource Allocation." Journal of Political Economy, Volume LX, No. 3, (June, 1952), pp. 208-217.

Buchanan, James M. "Federalism and Fiscal Equity." American Economic Review, (September, 1950), pp. 583-99.

Burns, R.M. "Federal-Provincial Cooperation and The Royal Commission on Taxation." Canadian Banker, (Winter, 1967), pp. 20-7.

Burns, R.M. "Federal-Provincial Relations: The Problem of Fiscal Adjustment." Canadian Tax Journal, Volume XX, No. 3, (May-June, 1972), pp. 246-55.

Burns, R.M. "Inter-governmental Relations in Canada: Further Developments." National Tax Journal, (March, 1965), pp. 15-24.

Carlson, Kenneth. "Equalizing Educational Opportunity." in Review of Educational Research, Volume 42, No. 4, (Fall 1972), pp. 453-75.

Clement, M.O. "Interstate Fiscal Equity and Federal Grants-in-aid. An Empirical Method and its Application, Fiscal 1962." Southern Economic Journal, XXIX, (April, 1963), pp. 279-96.

Coleman, James S. "Equality of Opportunity and Equality of Results." Harvard Educational Review, Volume 43, No. 1, (February, 1973), pp. 129-37.

Coleman, James S. Responsibility of Schools in The Provision of Equal Educational Opportunity. Paper delivered at NASSP Conference, February 12, 1968, Atlantic City. 15 p.

Crittenden, Brian. "Equal Opportunity: The Importance of Being in Context." Journal of Educational Thought, IV, 3, (December, 1970), pp. 133-42.

Davie, Bruce F., and Joseph T. White. "Equalization Alternatives in Grant-in-Aid Programs: Allotment Formulas and Measures of Fiscal Capacity." National Tax Journal, Volume XX, No. 2, (June, 1967), pp. 193-203.

Dupré, Joseph Stefan. Intergovernmental Relations and the Metropolitan Area. (Centennial study and programme on metropolitan problems. Paper No. 5) VI. 39 p.

Eapen, A.T. "Federalism and Fiscal Equity Reconsidered." National Tax Journal, (September, 1966), pp. 325-29.

Fisher, Glenn W. "Interstate Variation in State and Local Government Expenditures." National Tax Journal, (March, 1964), pp. 61, 65-69.

Greenbaum, W.N. "Serrano V. Priest: Implications for Educational Equality." Harvard Educational Review, 1971, 41, 521.

Hartle, Douglas G. Financing Education: The Major Alternatives. Speech delivered to Canadian School Trustees' Association, Ottawa, September 23, 1968. 18 p.

Hopkins, Thomas P. "Income Distribution in Grants-in-aid Equity Analysis." National Tax Journal, (June, 1965), pp. 209-13.

Horowitz, Ann R. "Income Distribution in Grants-in-aid Equity Analysis." National Tax Journal, (June, 1965), pp. 439-41.

Johns, R.L. "The Coming Revolution in School Finance." Phi Delta Kappan, (September, 1972), pp. 18-22.

Johnson, A.W. "The Dynamics of Federalism in Canada." (Revision of conference paper) Canadian Journal of Political Science, (March, 1968), pp. 18-39.

Manley-Casimir, M., and I.E. Housego. "Equality of Educational Opportunity: A Canadian Perspective." Alberta Journal of Educational Research, XVI, 2, (June, 1970), pp. 79-88.

Manzer, Ronald A. "The National Organization of Canadian Education." Canadian Public Administration, 11:494-508, (Winter, 1968)

Maxwell, James A. "Revenue-Sharing in Canada and Australia: Some Implications for the United States." National Tax Journal, Volume XXIV, No. 2, (June, 1971), pp. 251-65.

Morss, Elliott R. "Tax Sharing: Good and Bad Reasons For Its Adoption." *National Tax Journal*, (December, 1967), pp. 424-31.

Musgrave, Richard A. "Approaches to A Fiscal Theory of Political Federalism" in *Public Finances: Needs, Sources and Utilization*. A Conference of the Universities-National Bureau Committee for Economic Research. Princeton, New Jersey: Princeton University Press, 1961. pp. 97-133.

Oates, Wallace E. "The Theory of Public Finance in a Federal System." *Canadian Journal of Economics*, (February, 1968), pp. 37-54.

Osman, J.W. "The Dual Impact of Federal Aid On State and Local Government Expenditures." *National Tax Journal*, XIX, (December, 1966).

Osman, J.W. "On The Use of Intergovernmental Aids as an Expenditure Determinant." *National Tax Journal*, XXII, (December, 1968), pp. 437-47.

Perry, David B. "Federal-Provincial Fiscal Relations: The Last Six Years and the Next Five." *Canadian Tax Journal*, Volume XX, No. 4, (July-August, 1972), pp. 349-59.

Rivlin, Alice M. "Forensic Social Science." *Harvard Educational Review*, (February, 1973), p. 61-75.

Rossmiller, Richard A. "The Equalization Objective in State Support Programs: An Analysis of Measures, Need, and Ability." *National Tax Journal*, (December, 1965), pp. 362-69.

Rotstein, Abraham (Ed.) "Some Economic Issues in Educational Expansion." By Ian M. Drummond in *The Prospect of Change*, 1965. pp. 267-85.

Samuelson, Paul A. "The Pure Theory of Public Expenditure." *Review of Economics and Statistics*, Volume XXXVI, (November, 1954), pp. 382-98.

Scott, Anthony D. "Conditional and Unconditional Grants in Theory" in Robinson, A.J. and James Cutt (eds.) *Public Finance in Canada: Selected Readings*. Toronto: Methuen, 1968. pp. 116-22.

Seastone, D.A. *Bases for Educational Finance*. A paper presented to the Western Canada Educational Administrators' Conference, October 7-9, 1972, Banff, Alberta. 20 p.

Smiley, Donald V., and Ronald M. Burns. "Canadian Federalism and the Spending Power: Is Constitutional Restriction Necessary?" *Canadian Tax Journal*, XVII, (November-December, 1969), pp. 468-82.

Smith, Arthur J. Some Economic Aspects of Education. Notes for lecture at the Ontario Institute for Studies in Education, Toronto, Ontario, January 14, 1971. 32 p.

Stigler, George J. "The Tenable Range of Functions of Local Government" in Edmund S. Phelps (ed.), Private Wants and Public Needs, rev. ed. New York: W.W. Norton & Company, Inc., 1965. pp. 167-76.

Williams, Alan. "The Optimal Provision of Public Goods in A System of Local Government." Journal of Political Economy, LXXIV, (February, 1966), pp. 18-33.

Government Publications

Dominion Bureau of Statistics. Historical Review of Governments in Canada, 1952-62. Ottawa: Queen's Printer.

Dominion Bureau of Statistics. National Accounts Income and Expenditure, 1926-1956. Ottawa: Queen's Printer, 1960.

Economic Council of Canada. An Analysis of Interregional Differences in Manpower Utilization and Earnings. By Frank T. Denton. Staff Study No. 15. Ottawa: Queen's Printer, 1966.

Economic Council of Canada. Eighth Annual Review. Ottawa: Queen's Printer, 1971.

Ontario, Government of. "Federal-Provincial Shared-Cost Programs in Ontario" in Ontario Economic Review, (November/December, 1972), Volume 10, No. 5, pp. 1-3.

Ontario, Government of. The Report of the Minister of Education for Ontario, 1971. Toronto: Queen's Printer, 1972.

Statistics Canada. Consolidated Government Finance (various years). Ottawa: Queen's Printer, 1972.

Statistics Canada. Federal Government Finance (various years). Ottawa: Information Canada.

Statistics Canada. Provincial Government Finance (various years). Ottawa: Information Canada.

Statistics Canada. Local Government Finance (various years). Ottawa: Information Canada.

Statistics Canada. National Income and Expenditure Accounts, Historical Revision, 1926-1971. Ottawa: Information Canada, 1972.

Statistics Canada. National Accounts, Income and Expenditure (various years). Ottawa: Information Canada.

Statistics Canada. Principal Taxes and Rates. Ottawa: Information Canada, monthly.

Statistics Canada, Department of National Revenue. Taxation Statistics (various years). Ottawa: Information Canada.

Statistics Canada, Education Division. Advance Statistics of Education, 1972-73. Ottawa: Information Canada.

Statistics Canada, Education Division. Education in Canada, 1973. Ottawa: Information Canada, 1973. 613 p.

Statistics Canada, Education Division. Preliminary Statistics of Education, 1971-72. Ottawa: Information Canada.

Statistics Canada, Education Division. Survey of Education Finance (various years). Ottawa: Information Canada.

Statistics Canada, Health and Welfare Division. Vital Statistics (various years). Ottawa: Information Canada.

United States Advisory Commission On Intergovernmental Relations. Measures of State and Local Fiscal Capacity and Tax Effort. Staff Report M-16. Washington, D.C.: Government Printing Office, 1962. 150 p.

United States Advisory Commission on Intergovernmental Relations. The Rate of Equalization in Federal Grants. Staff Report A-19. Washington, D.C.: Government Printing Office, 1964. 64 p.

Other Sources

Brown, Wilfred J. Interprovincial Educational Differences in Canada: Alternative Measures of Their Underlying Causes and Their Alleviation. Unpublished M.A. Thesis, University of Toronto, 1969, 155 p.

Canadian Tax Foundation. The National Finances, 1972-73. Toronto: The Foundation.

Canadian Tax Foundation. Provincial and Municipal Finances, 1973. Toronto: The Foundation, 1973.